CISCO™

Catalyst 3750-X and 3560-X Switch Hardware Installation Guide

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Catalyst 3750-X and 3560-X Switch Hardware Installation Guide

Preface

Purpose

This guide describes the hardware features of the Catalyst 3750-X and 3560-X switches. It describes the physical and performance characteristics of each switch, explains how to install a switch, and provides troubleshooting information.

This guide does not describe system messages that you might receive or how to configure your switch. See the switch software configuration guide, the switch command reference, and the switch system message guide on
http://www.cisco.com/en/US/products/ps10745/tsd_products_support_series_home.html

Related Publications

Catalyst 3750-X switches:
http://www.cisco.com/en/US/products/ps10745/tsd_products_support_series_home.html

Catalyst 3560-X switches:
http://www.cisco.com/en/US/products/ps10744/tsd_products_support_series_home.html

- *Catalyst 3750-X and 3560-X Switch Getting Started Guide*
- *Catalyst 3750-X and 3560-X Switch Hardware Installation Guide*
- *Regulatory Compliance and Safety Information for the Catalyst 3750-X and 3560-X Switch*
- *Installation Notes for the Catalyst 3750-X, Catalyst 3560-X Switch Power Supply Modules*
- *Installation Notes for the Catalyst 3750-X and 3560-X Switch Fan Module*
- *Installation Notes for the Catalyst 3750-X and 3560-X Switch Network Modules*
- *Release Notes for the Catalyst 3750-X and 3560-X Switch*
- *Catalyst 3750-X and 3560-X Switch Software Configuration Guide*
- *Catalyst 3750-X and 3560-X Switch Command Reference*
- *Catalyst 3750-X, 3750-E, 3560-X, and 3560-E Switch System Message Guide*
- *Cisco IOS Software Installation Document*

Information about Cisco SFP and SFP+ modules is available from this Cisco.com site:

http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_installation_guides_list.html

SFP compatibility matrix documents are available from this Cisco.com site:

http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

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C H A P T E R **1**

Product Overview

The Catalyst 3750-X and 3560-X series switches are Ethernet switches to which you can connect devices such as Cisco IP Phones, Cisco Wireless Access Points, workstations, and other network devices such as servers, routers, and other switches.

The Catalyst 3750-X switches support stacking through Cisco StackWise technology and power management through StackPower. The Catalyst 3560-X switches do not support switch stacking or StackPower.

Unless otherwise noted, the term *switch* refers to a standalone switch and to a switch stack.

- **Switch Models, page 1-1**
- **Front Panel Description, page 1-3**
- **Rear Panel Description, page 1-15**
- **Management Options, page 1-21**

Switch Models

Table 1-1   Catalyst 3750-X Switch Models

Switch Model	Cisco IOS Image	Description
Catalyst 3750-X-24T-L	LAN Base image	24 10/100/1000 Ethernet ports, StackWise Plus, 1 network module[1] slot, 350-W power supply
Catalyst 3750-X-48T-L	LAN Base image	48 10/100/1000 Ethernet ports, StackWise Plus, one network module[1] slot, 350-W power supply
Catalyst 3750-X-24P-L	LAN Base image	24 10/100/1000 PoE+[2] ports, StackWise Plus, 1 network module[1] slot, 715-W power supply
Catalyst 3750-X-48P-L	LAN Base image	48 10/100/1000 PoE+[2] ports, StackWise Plus, one network module[1] slot, 715-W power supply
Catalyst 3750-X-48PF-L	LAN Base image	48 10/100/1000 PoE+[2] ports, StackWise Plus, 1 network module[1] slot, 1100-W power supply
Catalyst 3750-X-24T-S	IP Base image[3]	24 10/100/1000 Ethernet ports, StackWise Plus, StackPower, 1 network module[1] slot, 350-W power supply

Table 1-1   Catalyst 3750-X Switch Models (continued)

Switch Model	Cisco IOS Image	Description
Catalyst 3750-X-48T-S	IP Base image[3]	48 10/100/1000 Ethernet ports, StackWise Plus, StackPower, 1 network module[1] slot, 350-W power supply
Catalyst 3750-X-24P-S	IP Base image[3]	24 10/100/1000 PoE+[2] ports, StackWise Plus, StackPower, 1 network module[1] slot, 715-W power supply
Catalyst 3750-X-48P-S	IP Base image[3]	48 10/100/1000 PoE+[2] ports, StackWise Plus, StackPower, 1 network module[1] slot, 715-W power supply
Catalyst 3750-X-48PF-S	IP Base image[3]	48 10/100/1000 PoE+[2] ports, StackWise Plus, StackPower, 1 network module[1] slot, 1100-W power supply

1. Available network modules: 10-Gigabit Ethernet network module; 1-Gigabit Ethernet network module; blank module (see Table 1-3 on page 1-5).

2. PoE+ = Power over Ethernet plus (provides up to 30 W per port).

3. You can upgrade to the IP Services feature set when you order the switch.

Table 1-2   Catalyst 3560-X Switch Models

Switch	Part Number	Description
Catalyst 3560-X-24T-L	LAN Base image	24 10/100/1000 Ethernet ports, 1 network module[1] slot, 350-W power supply
Catalyst 3560-X-48T-L	LAN Base image	48 10/100/1000 Ethernet ports, 1 network module[1] slot, 350-W power supply
Catalyst 3560-X-24P-L	LAN Base image	24 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 715-W power supply
Catalyst 3560-X-48P-L	LAN Base image	48 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 715-W power supply
Catalyst 3560-X-48PF-L	LAN Base image	48 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 1100-W power supply
Catalyst 3560-X-24T-S	IP Base image[3]	24 10/100/1000 Ethernet ports, 1 network module[1] slot, 350-W power supply
Catalyst 3560-X-48T-S	IP Base image[3]	48 10/100/1000 Ethernet ports, 1 network module[1] slot, 350-W power supply
Catalyst 3560-X-24P-S	IP Base image[3]	24 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 715-W power supply
Catalyst 3560-X-48P-S	IP Base image[3]	48 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 715-W power supply
Catalyst 3560-X-48PF-S	IP Base image[3]	48 10/100/1000 PoE+[2] ports, 1 network module[1] slot, 1100-W power supply

1. Available network modules: 10-Gigabit Ethernet network module; 1-Gigabit Ethernet network module; blank module (see Table 1-3 on page 1-5).

2. PoE+ = Power over Ethernet plus (provides up to 30 W per port).

3. You can upgrade to the IP Services feature set when you order the switch.

Front Panel Description

The switch front panel includes a USB Type B console port, the 10/100/1000 Ethernet ports or the 10/100/1000 PoE+ ports, the network module, and the switch LEDs. Figure 1-1 shows the Catalyst 3750-X-48 PoE+ switch as an example. All the Catalyst 3750-X and 3560-X switches have similar components.

Figure 1-1   Switch Front Panel
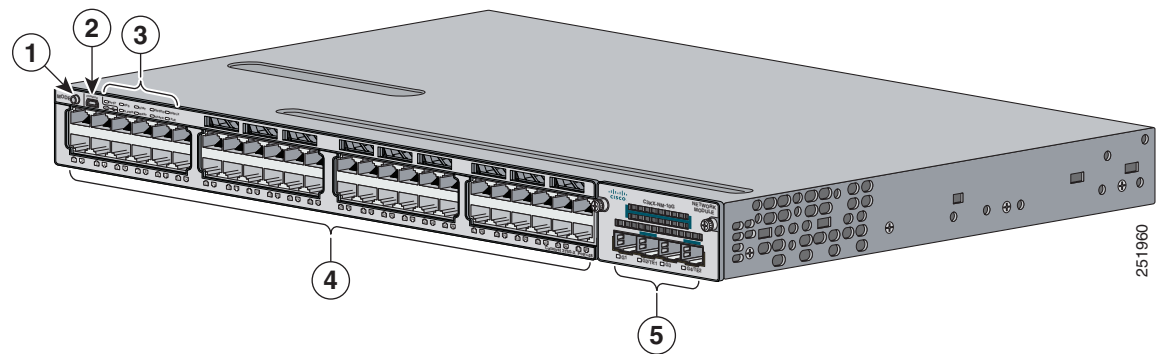
1	Mode button	**4**	10/100/1000 ports
2	USB Type B console port	**5**	Network Module
3	Status LEDs		

10/100/1000 Ethernet Ports

The 10/100/1000 Ethernet ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 100BASE-TX and 1000BASE-T traffic requires Category 5, Category 5e, or Category 6 unshielded twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

For information about the 10/100/1000 Ethernet port connections and specifications, see the "10/100/1000 Ethernet Port Connections" section on page 2-28 and Appendix B, "Connector and Cable Specifications."

PoE+ Ports

The PoE+ ports use the same connectors as described in the previous section and provide this support.

- Support for IEEE 802.3af compliant powered devices (up to 15.4 W)
- Support for IEEE 802.3at compliant powered devices (up to 30 W)
- Support for Cisco enhanced PoE
- Support for prestandard Cisco powered devices

- Configuration for StackPower PoE+. When the switch internal power supply module(s) cannot support the total load, StackPower configurations allow the switch to leverage power available from other switches (only Catalyst 3750-X switches)

- Configurable support for Cisco intelligent power management, including enhanced power negotiation, power reservation, and per-port power policing

Depending on the installed power supply modules, each port can deliver up to 30 W of PoE+. See Table 1-17 for the power supply matrix that defines the available PoE and PoE+ power per port.

Note   The output of the PoE+ circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

For information about power supply modules, PoE+ port connections, and PoE+ specifications, see the "Power Supply Modules" section on page 1-17, the "PoE+ Port Connections" section on page 2-28, and Appendix B, "Connector and Cable Specifications."

Network Modules

The switch has one hot-swappable network module that provides SFP and SFP+ uplink ports to connect to other devices. You must insert the network module during switch operation. Operating the switch without a network module is not supported. A blank module is available.

The switch generates logs when you insert or remove a network module with SFP ports.

Table 1-3   *Network Modules*

Network Module[1]	Description
Blank	This module has no uplink ports.
1-Gigabit Ethernet	This module has four 1-Gigabit SFP module slots. Any combination of standard SFP modules are supported. SFP+ modules are not supported. If you insert an SFP+ module in the 1-Gigabit network module, the SFP+ module does not operate, and the switch logs an error message.
10-Gigabit Ethernet	This module has four slots. Two slots support only 1-Gigabit SFP modules, two slots support either 1-Gigabit SFP or 10-Gigabit SFP+ modules. The four slots are grouped as two pairs with each pair consisting of one SFP slot and one SFP+ slot. Each pair supports either two 1-Gigabit SFP modules or one 10-Gigabit SFP+ module. A 10-Gigabit SFP+ module cannot operate at the same time as the corresponding 1-Gigabit SFP module in the pair. Supported combinations of SFP and SFP+ modules: • Slots 1, 2, 3, and 4 populated with 1-Gigabit SFP modules. • Slots 1 and 2 populated with 1-Gigabit SFP modules and Slot 4 populated with one 10-Gigabit SFP+ module. • Slot 2 populated with one 10-Gigabit SFP+ module and Slots 3 and 4 populated with 1-Gigabit SFP modules. • Slot 2 and Slot 4 each populated with 10-Gigabit SFP+ modules. A 10-Gigabit SFP+ module takes precedence over a 1-Gigabit SFP module except when an SFP module is first inserted in Slot 1 and has link. When you insert an SFP+ module in Slot 2, the SFP in Slot 1 retains link. The SFP+ module in Slot 2 does not operate. When the SFP module in Slot 1 is shutdown, loses link, or is removed, the SFP+ module in Slot 2 becomes operational. At this point, the SFP module in Slot 1 will not become operational under any circumstance for as long as an SFP+ module remains in Slot 2 whether it is link up or not. The same precedence applies to Slots 3 and 4.

1.   All network modules are hot-swappable.

For information about the network modules, see the "Installing a Network Module in the Switch" section on page 2-23. For cable specifications, see Appendix B, "Connector and Cable Specifications."

SFP and SFP+ Modules

The switch-Gigabit Ethernet SFP and SFP+ modules provide copper or fiber-optic connections to other devices. These transceiver modules are field-replaceable, providing the uplink interfaces when installed in an SFP module slot. The SFP modules have LC connectors for fiber-optic connections or RJ-45 connectors for copper connections.

Use only Cisco SFP modules on the switch.

Table 1-4   ***Cisco SFP Modules Supported for the 3750-X and 3560-X Switches***

Part Number	Description
GLC-GE-100FX=	100FX SFP on GE SFP ports for LAN switches[1]
GLC-LH-SM=	GE SFP, LC connector LX/LH transceiver
GLC-SX-MM=	GE SFP, LC connector SX transceiver
GLC-T=	1000BASE-T SFP transceiver module for copper connections
GLC-ZX-SM=	1000BASE-ZX SFP module for SMF, 1550 nm
GLC-BX-D=	1000BASE-BX10 SFP module for single-strand SMF, 1490-nm TX, 1310-nm RX wavelength
GLC-BX-U=	1000BASE-BX10 SFP module for single-strand SMF, 1310-nm TX, 1490-nm RX wavelength
CWDM-SFP-1470=	CWDM 1470-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590-nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610-nm SFP Gigabit Ethernet and 1G/2G FC
SFP-GE-S=	1000BASE-SX SFP module for MMF, 850 nm (DOM)[2]
SFP-GE-L=	1000BASE-LX/LH SFP module for SMF, 1300 nm (DOM)[2]
DWDM-SFP-3033=	DWDM SFP 1530.33-nm SFP (100 GHz ITU grid)
DWDM-SFP-3112=	DWDM SFP 1531.12-nm SFP (100 GHz ITU grid)
DWDM-SFP-3190=	DWDM SFP 1531.90-nm SFP (100 GHz ITU grid)
DWDM-SFP-3268=	DWDM SFP 1532.68-nm SFP (100 GHz ITU grid)
DWDM-SFP-3346=	DWDM SFP 1533.47-nm SFP (100 GHz ITU grid)
DWDM-SFP-3425=	DWDM SFP 1534.25-nm SFP (100 GHz ITU grid)
DWDM-SFP-3504=	DWDM SFP 1535.04-nm SFP (100 GHz ITU grid)
DWDM-SFP-3582=	DWDM SFP 1535.82-nm SFP (100 GHz ITU grid)
DWDM-SFP-3661=	DWDM SFP 1536.61-nm SFP (100 GHz ITU grid)
DWDM-SFP-3739=	DWDM SFP 1537.40-nm SFP (100 GHz ITU grid)
DWDM-SFP-3819=	DWDM SFP 1538.19-nm SFP (100 GHz ITU grid)
DWDM-SFP-3898=	DWDM SFP 1538.98-nm SFP (100 GHz ITU grid)
DWDM-SFP-3977=	DWDM SFP 1539.77-nm SFP (100 GHz ITU grid)
DWDM-SFP-4056=	DWDM SFP 1540.56-nm SFP (100 GHz ITU grid)
DWDM-SFP-4134=	DWDM SFP 1541.35-nm SFP (100 GHz ITU grid)
DWDM-SFP-4214=	DWDM SFP 1542.14-nm SFP (100 GHz ITU grid)
DWDM-SFP-4294=	DWDM SFP 1542.94-nm SFP (100 GHz ITU grid)

Table 1-4   Cisco SFP Modules Supported for the 3750-X and 3560-X Switches (continued)

Part Number	Description
DWDM-SFP-4373=	DWDM SFP 1543.73-nm SFP (100 GHz ITU grid)
DWDM-SFP-4453=	DWDM SFP 1544.53-nm SFP (100 GHz ITU grid)
DWDM-SFP-4532=	DWDM SFP 1545.32-nm SFP (100 GHz ITU grid)
DWDM-SFP-4612=	DWDM SFP 1546.12-nm SFP (100 GHz ITU grid)
DWDM-SFP-4692=	DWDM SFP 1546.92-nm SFP (100 GHz ITU grid)
DWDM-SFP-4772=	DWDM SFP 1547.72-nm SFP (100 GHz ITU grid)
DWDM-SFP-4851=	DWDM SFP 1548.51-nm SFP (100 GHz ITU grid)
DWDM-SFP-4931=	DWDM SFP 1549.32-nm SFP (100 GHz ITU grid)
DWDM-SFP-5012=	DWDM SFP 1550.12-nm SFP (100 GHz ITU grid)
DWDM-SFP-5092=	DWDM SFP 1550.92-nm SFP (100 GHz ITU grid)
DWDM-SFP-5172=	DWDM SFP 1551.72-nm SFP (100 GHz ITU grid)
DWDM-SFP-5252=	DWDM SFP 1552.52-nm SFP (100 GHz ITU grid)
DWDM-SFP-5332=	DWDM SFP 1553.33-nm SFP (100 GHz ITU grid)
DWDM-SFP-5413=	DWDM SFP 1554.13-nm SFP (100 GHz ITU grid)
DWDM-SFP-5494=	DWDM SFP 1554.94-nm SFP (100 GHz ITU grid)
DWDM-SFP-5575=	DWDM SFP 1555.75-nm SFP (100 GHz ITU grid)
DWDM-SFP-5655=	DWDM SFP 1556.55-nm SFP (100 GHz ITU grid)
DWDM-SFP-5736=	DWDM SFP 1557.36-nm SFP (100 GHz ITU grid)
DWDM-SFP-5817=	DWDM SFP 1558.17-nm SFP (100 GHz ITU grid)
DWDM-SFP-5898=	DWDM SFP 1558.98-nm SFP (100 GHz ITU grid)
DWDM-SFP-5979=	DWDM SFP 1559.79-nm SFP (100 GHz ITU grid)
DWDM-SFP-6061=	DWDM SFP 1560.61-nm SFP (100 GHz ITU grid)
DWDM-SFP-6141=	DWDM SFP 1561.42-nm SFP (100 GHz ITU grid)

1.   Not supported for NEBS.

2.   DOM = digital optical monitoring.

1

Table 1-5   Cisco SFP+ Modules Supported for the 3750-X and 3560-X Switches

Part Number	Description
SFP-10G-LR=	10 GBASE LR SFP+ transceiver module for SMF, 1350 nm, LC duplex connector
SFP-10G-SR=	10 GBASE SR SFP+ transceiver module for MMF, 850 nm, LC duplex connector
SFP-10G-LRM=	10 GBASE-LRM SFP+ module for MMF and SMF, 1310 nm
SFP-H10GB-CU1M=	10 GBASE-CU Twinax SFP+ cable assembly, 1 meter

Table 1-5   Cisco SFP+ Modules Supported for the 3750-X and 3560-X Switches

Part Number	Description
SFP-H10GB-CU3M=	10 GBASE-CU Twinax SFP+ cable assembly, 3 meters
SFP-H10GB-CU5M=	10 GBASE-CU Twinax SFP+ cable assembly, 5meters

For information about SFP modules, see your SFP module documentation and the "Installing SFP and SFP+ Modules" section on page 2-25. For cable specifications, see Appendix B, "Connector and Cable Specifications."

Note   When ordering or using CX1 cables, ensure that the version identifier is 2 or higher.

The Catalyst 3560-X switch supports the SFP module patch cable (CAB-SFP-50CM), a 0.5-meter, copper, passive cable with SFP module connectors at each end. This cable is only used with 1-Gigabit Ethernet SFP ports to connect two Catalyst 3560-X switches in a cascaded configuration.

LEDs

You can use the switch LEDs to monitor switch activity and its performance. Figure 1-2 shows the Catalyst 3750-X switch LEDs and the Mode button that you use to select a port mode.

Figure 1-2   Switch Front Panel LEDs
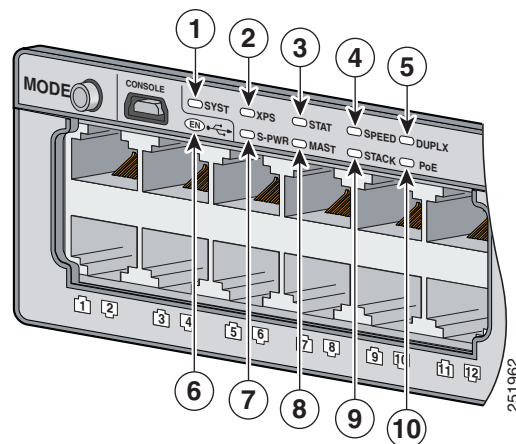
1	System LED	6	USB console port LED
2	XPS[1] LED	7	S-PWR (StackPower) LED[2]
3	Status LED	8	Master LED[2]
4	Speed LED	9	Stack LED[2]
5	Duplex LED	10	PoE+ LED[3]

1. XPS = Expandable power system.

2. Only Catalyst 3750-X switches.

3. Only switches with PoE+ ports.

System LED

Table 1-6   System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Blinking Green	Switch is running power on self-test (POST).
Blinking Amber	There is a fault with one of the following: • Network module (non-traffic-related) • Power supply • Fan module
Amber	System is receiving power but is not functioning properly.

For information on the System LED colors during power-on self-test (POST), see the "Diagnosing Problems" section on page 4-1.

XPS LED

Table 1-7   XPS LED

Color	XPS Status
Off	XPS cable is not installed. Switch is in StackPower mode (Catalyst 3750-X).
Green	XPS is connected and ready to provide back-up power.
Blinking green	XPS is connected but is unavailable because it is providing power to another device (redundancy has been allocated to a neighboring device).
Amber	The XPS is in standby mode or in a fault condition. See the XPS-2200 documentation for information about the standby mode and fault conditions.
Blinking amber	The power supply in a switch has failed, and the XPS is providing power to that switch (redundancy has been allocated to this device).

Port LEDs and Modes

Each Ethernet port and 10-Gigabit Ethernet module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports. The port mode determines the type of information shown by the port LEDs. Table 1-8 lists the mode LEDs and their associated port modes and meanings.

To select or change a mode, press the Mode button until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change. Table 1-9 explains how to interpret the port LED colors in different port modes.

When you press the Mode button on any switch in the Catalyst 3750-X switch stack, all the stack switches change to show the same selected mode. For example, if you press the Mode button on the stack master to show the SPEED LED, all the other switches in the stack also show the SPEED LED.

Table 1-8   Port Mode LEDs

Mode LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
SPEED	Port speed	The port operating speed: 10, 100, or 1000 Mb/s.
DUPLX	Port duplex mode	The port duplex mode: full duplex or half duplex.
		Note The 10/100/1000 ports operate only in full-duplex mode.
MAST[1]	Master	The stack master status
STACK[1]	Stack member status	The stack member status.
	StackWise port status	The StackWise port status. See the "Stack LED (Catalyst 3750-X)" section on page 1-12.
PoE+[2]	PoE+ port power	The PoE+ port status.

1.   Only Catalyst 3750-X switches.

2.   Only switches with PoE+ ports.

Table 1-9   Meaning of Switch LED Colors in Different Modes

Port Mode	Port LED Color	Meaning
STAT (port status)	Off	No link, or port was administratively shut down.
	Green	Link present, no activity.
	Blinking green	Activity. Port is sending or receiving data.
	Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication.
	Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED can be amber for up to 30 seconds as STP checks the switch for possible loops.
SPEED	**10/100/1000 ports**	
	Off	Port is operating at 10 Mb/s.
	Green	Port is operating at 100 Mb/s.
	Single green flash (on for 100 ms, off for 1900 ms)	Port is operating at 1000 Mb/s.
	Network module slots	
	Off	Port is not operating.
	Blinking green	Port is operating at up to 10 Gb/s.

Table 1-9   Meaning of Switch LED Colors in Different Modes (continued)

Port Mode	Port LED Color	Meaning
DUPLX (duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.
MAST[1] (data stack master)	Off	The switch is not the stack master. **Note** For a standalone switch, this LED is off.
	Green	The switch is the stack master.
	Amber	Error during stack master election.
STACK[1] (stack member)	Off	No stack member corresponding to that member number.
	Blinking green	Stack member number.
	Green	Member numbers of other stack member switches.
PoE+[2]	Off	PoE+ is off. If the powered device is receiving power from an AC power source, the port LED is off even if the device is connected to the switch port.
	Green	PoE+ is on. The port LED is green when the switch port is providing power.
	Alternating green and amber	PoE+ is denied because providing power to the powered device will exceed the switch power capacity.
	Blinking amber	PoE+ is off due to a fault or because it has exceeded a limit set in the switch software. ⚠ **Caution** PoE+ faults are caused when noncompliant cabling or powered devices are connected to a PoE+ port. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices to PoE+ ports. You must remove from the network any cable or device that causes a PoE+ fault.
	Amber	PoE+ for the port has been disabled. **Note** PoE+ is enabled by default.

1. Only Catalyst 3750-X switches.
2. Only switches with PoE or PoE+ ports.

USB Console LED

The USB console LED shows whether there is an active USB connection to the port.

Table 1-10   *USB Console Port LED*

Color	Description
Off	USB console is disabled.
Green	USB console is enabled.

S-PWR LED (Catalyst 3750-X)

Table 1-11   *S-PWR LED*

| Color	Description
Off	StackPower cable is not connected, or the switch is in standalone mode.
Green	An XPS cable is connected to the XPS-2200. Each StackPower port is connected to another switch or to an XPS-2200 (Catalyst 3750-X switches).
Blinking Green	This appears on the switch in a StackPower ring configuration that detects an open ring or has only one StackPower cable connected, and no connection to an XPS-2200.
Amber	There is a fault: load shedding is occurring, a StackPower cable is defective, or administrative action is required. See the switch software configuration guide for information about configuring StackPower.
Blinking Amber	The StackPower budget is not sufficient to meet current power demands.

Master LED (Catalyst 3750-X)

Table 1-12   *Master LED*

Color	Description
Off	Switch is not the stack master.
Green	Switch is the stack master or a standalone switch.
Amber	An error occurred when the switch was selecting the stack master switch, or another type of stack error occurred.

Stack LED (Catalyst 3750-X)

The stack LED shows the sequence of member switches in a stack. Up to nine switches can be members of a stack. The first nine port LEDs show the member number of a switch in a stack. Figure 1-3 shows the LEDs on the first switch, which is stack member number 1. For example, if you press the Mode button and select Stack, the LED for port 1 blinks green. The LEDs for ports 2 and 3 are solid green, as these represent the member numbers of other switches in the stack. The other port LEDs are off because there are no more members in the stack.

Figure 1-3   Stack LED
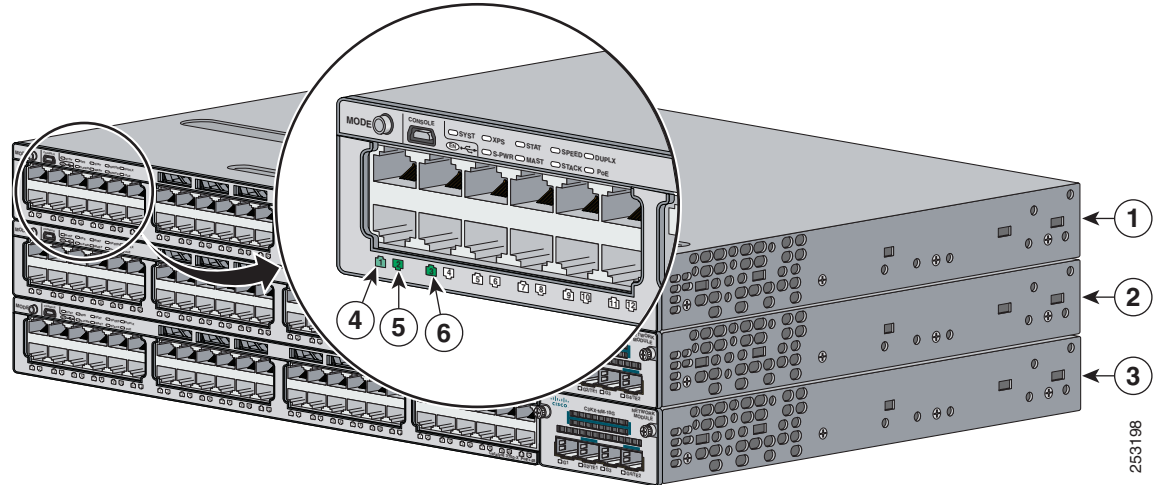
1	Stack member 1	**4**	LED blinks green to show that this is switch 1 in the stack.
2	Stack member 2	**5**	LED is solid green to show that switch 2 is a stack member.
3	Stack member 3	**6**	LED is solid green to show that switch 3 is a stack member.

When you select the Stack LED mode, the representative Stack LEDs are green when the StackWise ports are up, and the representative Stack LEDs are amber when the ports are down.

PoE+ LED

If the PoE+ LED mode is not selected on a switch with PoE+ ports, the PoE+ LED still shows detected PoE+ problems.

Table 1-13   PoE+ Mode LED

Color	**PoE+ Status**
Off	PoE+ mode is not selected. None of the 10/100/1000 ports have been denied power or are in a fault condition.
Green	PoE+ mode is selected, and the port LEDs show the PoE+ status.
Blinking amber	PoE+ mode is not selected. At least one of the 10/100/1000 ports has been denied power, or at least one of the 10/100/1000 ports has a PoE+ fault.

Network Module LEDs

Figure 1-4   Network Module LEDs (10-Gigabit Network Module Shown)
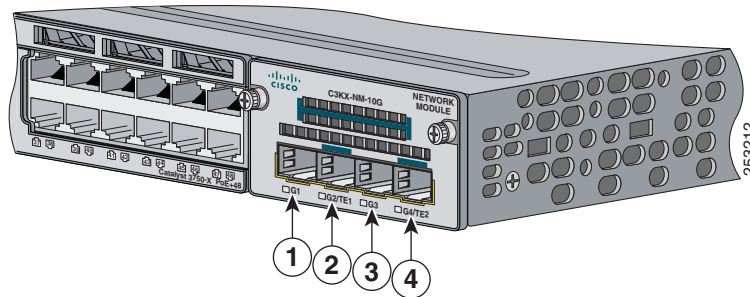
1	G1 LED	**3**	G3 LED
2	G2/TE1 LED	**4**	G4/TE2 LED

Table 1-14   Network Module LEDs

Color	Network Module Link Status
Off	Link is off.
Green	Link is on, no activity.
Blinking green	Activity on a link, no faults.
Blinking amber	Link is off due to a fault or because it has exceeded a limit set in the switch software. ⚠ **Caution** Link faults are caused when noncompliant cabling is connected to an SFP or SFP+ port. Use only standard-compliant cabling to connect to Cisco SFP and SFP+ ports. You must remove from the network any cable or device that causes a link fault.
Amber	Link for the SFP or SFP+ has been disabled.

USB Mini-Type B Port

A USB 5-pin mini-Type B connector on the front panel is available for switch management (Figure 1-5).

Figure 1-5   USB Mini-Type B Console Port
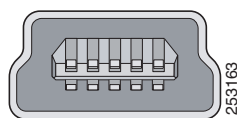
See the "Management Ports" section on page 1-20 for details.

Rear Panel Description

The switch rear panel has a ground connector, an RJ-45 console port, an RJ-45 10/100 management port, a USB Type A connector, two StackWise connectors (only Catalyst 3750-X switches), two fan modules, an XPS-2200 connector, a StackPower connector (only Catalyst 3750-X switches), and two power supply module slots. See Figure 1-6, and the descriptions on the following pages. Figure 1-6 shows the Catalyst 3750-X-48 PoE+ switch, which has one connector for either a StackPower or an XPS connection, and one connector only for StackPower. Figure 1-7 shows the Catalyst 3560-X switch rear panel, which has one connector for XPS and no StackPower connector.

Figure 1-6   Catalyst 3750-X Switch Rear Panel
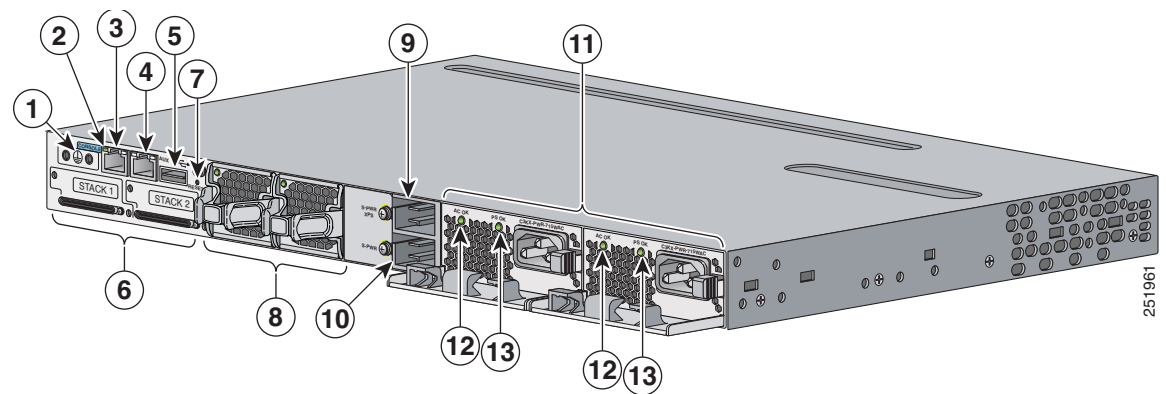
1	Ground connector	**8**	Fan modules
2	RJ 45 console port LED	**9**	StackPower or XPS-2200 connector
3	RJ-45 console port	**10**	StackPower connector
4	RJ-45 10/100 management port	**11**	Power supply modules (AC power supply modules shown)
5	USB Type A connector	**12**	AC power (input) status LED
6	Stack cable connectors	**13**	Power supply (output) status LED
7	Reset button		

Figure 1-7   Catalyst 3560-X Switch Rear Panel
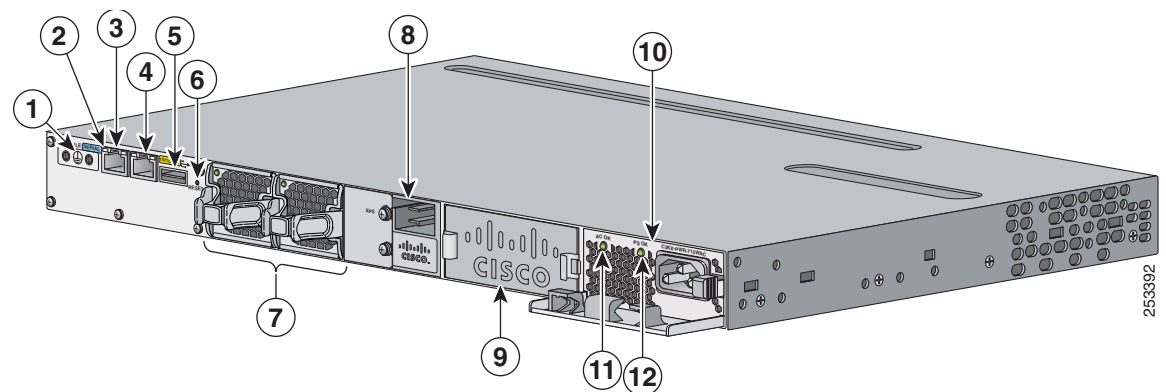
1	Ground connector	**7**	Fan modules
2	RJ-45 console port LED	**8**	XPS-2200 connector
3	RJ-45 console port	**9**	Power supply module slot (blank module shown)
4	RJ-45 10/100 management port	**10**	Power supply module (AC power supply module shown)
5	USB Type A connector	**11**	AC power (input) status LED
6	Reset button	**12**	Power supply (output) status LED

RJ-45 Console Port LED

Table 1-15   RJ-45 Console Port LED

Color	RJ-45 Console Port Status
Off	RS-232 console is disabled.
Green	RS-232 console is enabled.

USB Type A Interface

The USB Type A interface provides access to external USB FLASH devices (also known as thumb drives or USB keys).

The interface supports Cisco USB flash drives with capacities from 64 MB to 1 GB.

Cisco IOS software provides standard file system access to the flash device: read, write, erase, and copy, as well as formatting of the flash device with a FAT file system. You can boot the switch from a USB drive.

For information about the switch management ports, see the switch software configuration guide and the command reference on Cisco.com and the "Connector and Cable Specifications" section on page B-1.

StackWise Ports

The Catalyst 3750-X switch ships with a 0.5-meter StackWise cable (CAB-STACK-50CM) that you can use to connect the StackWise ports.

⚠️
Caution   Use only approved cables (CAB-STACK-50CM, CAB-STACK-1M, CAB-STACK-3M, CAB-STACK-50CM-NH,CAB-STACK-1M-NH, or CAB-STACK-3M-NH), and connect only to similar Cisco equipment. Equipment might be damaged if connected to nonapproved Cisco cables or equipment.

You can order these StackWise cables from your Cisco sales representative:

- CAB-STACK-50CM (0.5-meter cable)
- CAB-STACK-1M= (1-meter cable)
- CAB-STACK-3M= (3-meter cable)

- CAB-STACK-50CM-NH= (0.5-meter cable, nonhalogen)
- CAB-STACK-1M-NH= (1-meter cable, nonhalogen)
- CAB-STACK-3M-NH= (3-meter cable, nonhalogen)

Power Supply Modules

The 24- and 48-port switches are powered through one or two internal power supply modules. The "Switch Power Supply Modules" section on page 1-17 and Table 1-16 describe the supported power supply modules.

Switch Power Supply Modules

The switch has two internal power supply module slots. You can use two AC modules, two DC modules, a mixed configuration of one AC and one DC power supply module, or one power supply module and a blank module.

The switch can operate with either one or two active power supply modules or with power supplied by an XPS-2200. A Catalyst 3750-X switch that is in a StackPower stack can operate with power supplied by other switches in the stack.

Table 1-1 and Table 1-2 show the power supply modules that ship with each switch model. All power supply modules (except the blank modules) have internal fans. All switches ship with a blank power supply module in the second power supply slot.

> **Caution**   Do not operate the switch with one power supply module slot empty. For proper chassis cooling, both power supply module slots must be populated.

The 350-W and 715-W AC power supply modules are autoranging units that support input voltages between 100 and 240 VAC. The 1100-W power supply module is an autoranging unit that supports input voltages between 115 and 240 VAC. The 440-W DC power supply module has dual input feeds (A and B) and supports input voltages between 36 and 72 VDC. The output voltage range is 51–57 V.

Each AC power supply module has a power cord for connection to an AC power outlet. The 1100-W and 715-W modules use a 16-AWG cord (only North America). All other modules use an 18-AWG cord. The DC-power supply module must be wired to a DC-power source.

The XPS-2200 powers connected switches when the power supply is removed or fails. When a new switch power supply is installed, the switch software polls the device. The switch power supply again provides power, and the XPS-2200 is available to power other devices.

Table 1-16 shows the power supply modules available for Catalyst 3750-X and 3560-X switches and power supply configurations based on switch models.

Table 1-16   Switch Power Supply Modules

Power Supply Module	48-Port PoE+ Switch[1]	24-Port PoE+ Switch	48-Port Non-PoE+ Switch	24-Port Non-PoE+ Switch
C3KX-PWR-1100WAC= C3KX-PWR-1100WAC-JP=[2]	Primary or spare	Spare	Spare	Spare
C3KX-PWR-715WAC=	Spare	Primary or spare	Spare	Spare

Table 1-16   Switch Power Supply Modules (continued)

Power Supply Module	48-Port PoE+ Switch[1]	24-Port PoE+ Switch	48-Port Non-PoE+ Switch	24-Port Non-PoE+ Switch
C3KX-PWR-350WAC=	Spare	Spare	Primary or spare	Primary or spare
C3KX-PWR-440WDC=	Primary or spare	Primary or spare	Primary or spare	Primary or spare
C3KX-PSBAY-BLNK	Blank module	Blank module	Blank module	Blank module

1. For full 15.4 W support on a 48-port PoE+ switch, you must use a C3KX-PWR-1100WAC power supply module.

2. This module is used only in Japan.

Table 1-17   Switch Power Supply Requirements for PoE and PoE+

PoE Option	24-Port Switch	48-Port Switch
PoE (up to 15.4 W per port)	(1) 715-W power supply (2) 440-W DC power supplies	(1) 1100-W power supply
PoE+ (up to 30 W per port)	(1) 1100-W power supply	(1) 1100-W power supply plus one 715-W power supply or (2) 1100-W power supplies

Note   A 48-port switch with one 715-W power supply provides up to 8.7 W of PoE to all ports.

The power supply modules have two status LEDs.

Table 1-18   Switch Power Supply Module LEDs

AC-Power Supply Module LEDs

AC OK	Description	PS OK	Description
Off	No AC input power.	Off	Output is disabled, or input is outside operating range (AC LED is off).
Green	AC input power present.	Green	Power output to switch active.
		Red	Output has failed.

DC-Power Supply Module LEDs

| DC OK	Description	PS OK	Description
Off	No DC input power.	Off	Output is disabled, or input is outside operating range (DC LED is off).
Green	DC input power present.	Green	Power output to switch active.
		Red	Output has failed.

For information about replacing a power supply module, wiring a DC power supply module, and module specifications, see Chapter 3, "Power Supply and Fan Module Installation," and Appendix A, "Technical Specifications."

Fan Modules

The switch has two internal hot-swappable 12-V fan modules, each with two fans. The air circulation system consists of the fan modules and the power supply modules. The airflow patterns vary depending on the power supply configuration.

Figure 1-8 shows the airflow patterns for the 24- and 48-port switches. The blue arrow shows cool air flow, and the red arrow shows warm air flow. When the fan modules are operating properly, a green LED is on at the top left corner of the fan assembly (viewed from the rear). If the fan fails, the LED turns to amber.

Figure 1-8   24- and 48-Port Switch Airflow Patterns
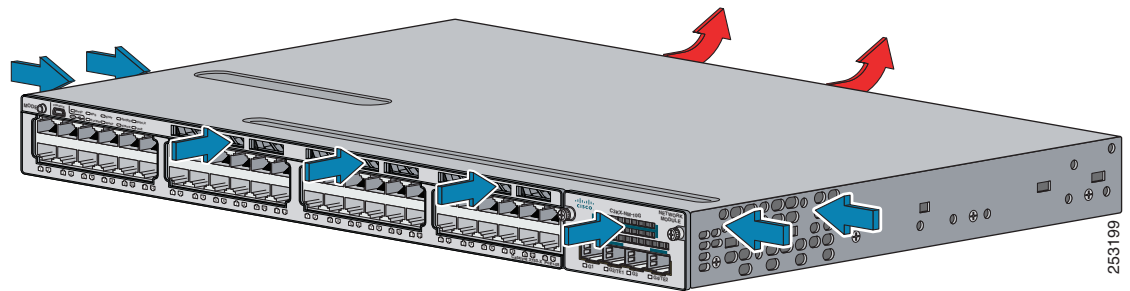
For information about installing a fan module and the module specifications, see Chapter 3, "Power Supply and Fan Module Installation," and Appendix A, "Technical Specifications."

XPS Connector

⚠️

Warning   **Attach only the following Cisco external power system to the switch: XPS 2200.** Statement 387

The Cisco XPS-2200 is a expandable power system that can support nine network switches and provides power to one or two failed switches at a time. It senses when the power supply of a connected switch fails and provides power to the failed switch.

Use the XPS-2200 only with approved Cisco XPS cables. You can order these XPS cables for connecting your switch to the XPS-2200 from your Cisco sales representative:

- CAB-XPS-58CM (0.58-meter cable)
- CAB-XPS-150CM (1.5-meter cable)

The Cisco XPS-2200 has a nominal output level of –56 V. The total maximum output power depends on the installed power supply modules.

The nine ports on the XPS-2200 provide the power and management signals to the Catalyst 3750-X and 3560-X switches. Other switch models do not support this management communication. The XPS-2200 communicates with each switch through the 12-pin cable. All connected switches can simultaneously communicate with the XPS-2200. You can configure these XPS-2200 features through the switch software:

- Enable XPS active or standby mode for each connected switch
- Configure switch priority for XPS support
- List the connected switches and power supply module sizes
- Report when a switch is powered by the XPS
- Report the XPS power supply module status
- Read and monitor backup, failure, and exception history

See the switch software configuration guide on Cisco.com:

http://www.cisco.com/en/US/products/ps10745/products_installation_and_configuration_guides_list.html

StackPower Connector (Catalyst 3750-X Switches)

The Catalyst 3750-X switches have a StackPower connector for use with Cisco StackPower cables to configure a switch power stack that includes up to four switches. By adding an XPS-2200 expandable power system, you can configure a power stack that comprises up to nine switches. A switch power stack can be configured in redundant or power-sharing mode.

You can order these StackPower cables from your Cisco sales representative:

- CAB-SPWR-30CM (0.3-meter cable)
- CAB-SPWR-150CM (1.5-meter cable)

For details about connecting StackPower cables and StackPower guidelines, see the "Planning a StackPower Stack (Catalyst 3750-X Switches)" section on page 2-8.

Management Ports

Ethernet Management Port

You can connect the switch to a host such as a Windows workstation or a terminal server through the 10/100 Ethernet management port or one of the console ports (see Figure 1-5 and Figure 1-6). The 10/100 Ethernet management port connection uses a RJ-45 crossover or straight-through cable. The RJ-45 console port connection uses the supplied RJ-45-to-DB-9 female cable. The USB console port uses a USB type-A-to-USB 5-pin mini-Type B cable.

Table 1-19 shows the Ethernet management port LED colors and their meanings.

Table 1-19   RJ-45 Console Port LED

Color	Description
Green	Active link to PC

Table 1-19   RJ-45 Console Port LED

Color	Description
Off	Inactive link
Amber	POST failure

USB Mini-Type B Port

The switch provides a USB mini-Type B console connection on the front panel, and the RJ-45 console port on the switch rear panel. Console output is always active on both connectors, but console input is active on only one connector at a time, with the USB connector taking precedence over the RJ-45 connector.

Use a USB type-A-to-USB 5-pin mini-Type B cable to connect a PC or other device to the switch. The required USB cable is included in the optional accessory kit, (part number 800-33434).

The connected device must include a terminal emulation application.

Windows PCs need a driver for the USB port. See the "Installing the Cisco Microsoft Windows USB Device Driver" section on page C-3 for installation instructions.

When the switch detects a valid USB connection to a powered device, input from the Ethernet connection is immediately disabled, and input from the USB console is enabled. Removing the USB connection immediately reenables input from the Ethernet connection. An LED on the switch front panel (see Figure 1-2) is green when the USB console connection is enabled.

The switch provides a configurable inactivity timeout that reactivates the RJ-45 console if no input activity has occurred on the USB console for a specified time period. After the USB console has been deactivated due to a timeout, you can restore its operation by disconnecting and reconnecting the USB cable. You can disable USB console operation by using Cisco IOS commands. See the switch software configuration guide for details.

Management Options

- Cisco Network Assistant

  Cisco Network Assistant is a PC-based network management GUI application for LANs. You can use the GUI to configure and manage switch clusters or standalone switches. Cisco Network Assistant is available at no cost and can be downloaded from this URL:

  http://www.cisco.com/go/networkassistant

  For information on starting the Network Assistant application, see the *Getting Started with Cisco Network Assistant* guide on Cisco.com.

- Device manager

  You can use the device manager in the switch memory to manage individual and standalone switches. This web browser interface offers quick configuration and monitoring from anywhere in your network. For information, see the switch getting started guide and the device manager online help.

- Cisco IOS CLI

  You can configure and monitor the switch and switch cluster members from the CLI. You can access the CLI by connecting your management station directly to the switch console port or by using Telnet from a remote management station. See the switch command reference on Cisco.com for more information.

- CiscoWorks application

  The CiscoWorks LAN Management Solution (LMS) is a suite of management tools that simplify the configuration, administration, monitoring, and troubleshooting of Cisco networks. See the LMS documentation for more information.

- SNMP network management

  You can manage switches from a Simple Network Management Protocol (SNMP)-compatible management station that is running platforms such as HP OpenView or SunNet Manager. The switch supports a comprehensive set of Management Information Base (MIB) extensions and four Remote Monitoring (RMON) groups. See the switch software configuration guide on Cisco.com and the documentation that came with your SNMP application for more information.

Network Configurations

See the switch software configuration guide on Cisco.com for network configuration concepts and examples of using the switch to create dedicated network segments and interconnecting the segments through Gigabit Ethernet connections.

C H A P T E R 2

Switch Installation

This chapter describes how to install and connect a Catalyst 3750-X or a 3560-X switch. It also includes planning and cabling considerations for stacking switches (only Catalyst 3750-X switches). Read the topics and perform the procedures in this order:

- Preparing for Installation, page 2-1
- Planning a Switch Data Stack (Catalyst 3750-X Switches), page 2-4
- Planning a StackPower Stack (Catalyst 3750-X Switches), page 2-8
- Installing the Switch, page 2-14
- Connecting to the StackWise Ports (Catalyst 3750-X Switches), page 2-21
- Installing a Network Module in the Switch, page 2-23
- Installing SFP and SFP+ Modules, page 2-25
- Connecting Devices to the Ethernet Ports, page 2-27
- Where to Go Next, page 2-29

For initial switch setup, how to assign the switch IP address, and for powering information, see the switch getting started guide on Cisco.com.

Preparing for Installation

- Safety Warnings, page 2-1
- Installation Guidelines, page 2-3
- Tools and Equipment, page 2-4

Safety Warnings

This section includes the basic installation caution and warning statements. Translations of the warning statements appear in the *Regulatory Compliance and Safety Information for the Catalyst 3750-X and 3560-X Switch* document available at Cisco.com. Read this section before you start the installation procedure.

Warning   **To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 113•F (45•C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.** Statement 17B

Warning   **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.** Statement 43

Warning   **Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage.** Statement 48

Warning   **Ethernet cables must be shielded when used in a central office environment.** Statement 171

Warning   **Voice over IP (VoIP) service and the emergency calling service do not function if power fails or is disrupted. After power is restored, you might have to reset or reconfigure equipment to regain access to VoIP and the emergency calling service. In the USA, this emergency number is 911. You need to be aware of the emergency number in your country.** Statement 361

Warning   **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Warning   **Read the installation instructions before connecting the system to the power source.** Statement 1004

Warning   **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017

Warning   **Use copper conductors only.** Statement 1025

Warning   **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028

Warning   **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Warning   **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

Warning   **For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection: 10/100/1000 Ethernet.** Statement 1044

Warning   **Installation of the equipment must comply with local and national electrical codes.** Statement 1074

Statement 371—Power Cable and AC Adapter

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Caution   To comply with the Telcordia GR-1089 Network Equipment Building Systems (NEBS) standard for electromagnetic compatibility and safety, connect the Ethernet cables only to intrabuilding or nonexposed wiring or cabling.

Caution   To comply with the Telcordia GR-1089 NEBS standard, PoE or non-PoE 10/100/1000 Ethernet port cables that exit from either the left or right side of the switch should be routed and tied to the nearest rack metal.

Note   The grounding architecture of this product is DC-isolated (DC-I)

Installation Guidelines

Before installing the switch, verify that these guidelines are met:

- Clearance to front and rear panels is such that
  - Front-panel indicators can be easily read.
  - Access to ports is sufficient for unrestricted cabling.
  - AC power cord can reach from the AC power outlet to the connector on the switch rear panel.
  - The SFP or SFP+ module minimum bend radius and connector length is met. See the SFP or SFP+ module documentation for more information.
- For switches with the optional 1100-W power-supply module (C3KX-PWR-1100WAC=), first rack-mount the switch before installing the power-supply module.
- Make sure power-supply modules and fan modules are securely inserted in the chassis before moving the switch.

- When connecting or disconnecting the power cord on a switch that is installed above or below a 1100-W power supply-equipped switch, you might need to remove the module from the switch to access the power cord.

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.

- For copper connections on Ethernet ports, cable lengths from the switch to connected devices can be up to 328 feet (100 meters).

- For cable requirements for SFP+ module connections, see the "Cable and Adapter Specifications" section on page B-5. Each port must match the wave-length specifications on the other end of the cable, and the cable must not exceed the minimum cable length.

- Operating environment is within the ranges listed in Appendix A, "Technical Specifications."

- Airflow around the switch and through the vents is unrestricted.

- Temperature around the unit does not exceed 113°F (45°C). If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

- Cisco Ethernet Switches are equipped with cooling mechanisms, such as fans and blowers. However, these fans and blowers can draw dust and other particles, causing contaminant buildup inside the chassis, which can result in system malfunction. You must install this equipment in an environment as free from dust and foreign conductive material (such as metal flakes from construction activities) as is possible.

These standards provide guidelines for acceptable working environments and acceptable levels of suspended particulate matter:

  - Network Equipment Building Systems (NEBS) GR-63-CORE (only with the DC power supply)

  - National Electrical Manufacturers Association (NEMA) Type 1

  - International Electrotechnical Commission (IEC) IP-20

Tools and Equipment

You need to supply a number-2 Phillips screwdriver to rack-mount the switch. For connecting the StackWise cables, you need a ratcheting torque screwdriver capable of 5 lbf-in. (80 ozf-in.).

Planning a Switch Data Stack (Catalyst 3750-X Switches)

Catalyst 3750-X switches can share bandwidth by using data stacking.

Switch Data Stacking Guidelines

For general concepts and management procedures for switch stacks, see the switch software configuration guide on Cisco.com. When adding a Catalyst 3750-X switch to a Catalyst 3750 switch stack, review the *Catalyst 3750-X Switch Stack Compatibility Guide* on Cisco.com for information about mixed stack configurations.

Before connecting the switches in a stack, keep in mind these stacking guidelines:

- Size of the switch and any optional power-supply module. The 1100-W power-supply module is longer than the other modules. Stacking switches with the same power-supply modules together makes it easier to cable the switches. For switch dimensions, see Appendix A, "Technical Specifications."

- Length of cable. Depending on the configurations that you have, you might need different-sized cables. If you do not specify the length of the StackWise cable, the 0.5-meter cable is supplied. If you need the 1-meter cable or the 3-meter cable, you can order it from your Cisco supplier. For cable part numbers, see the "StackWise Ports" section on page 1-16. The "Data Stack Cabling Configurations" section on page 2-5 provides examples of recommended configurations.

- For rack-mounted switch stacks connected to the XPS-2200, review this recommended sequence of events:

    - If you are using the XPS-2200, install the XPS first at the bottom of the stack. If needed, allow one RU space between the XPS and the first switch above to provide room for cabling.

    - Connect the 12-pin XPS cables to the XPS-2200.

    - Rack-mount the switches. If you have the optional 1100-W power-supply module, first mount the switch before installing the power-supply module.

    - Connect the XPS cable to the first switch above the XPS-2200. Connect the stack cables to the first switch above the XPS.

    - Connect the XPS cable to the second switch above the XPS-2200. Connect the stack cables to the next switch above the XPS.

    - Repeat until all switches are connected.

- For rack-mounted switch stacks that are members of a StackPower stack as well as a data stack, see the "Planning a StackPower Stack (Catalyst 3750-X Switches)" section on page 2-8.

Data Stack Cabling Configurations

Figure 2-1 is an example of a recommended configuration that uses the supplied 0.5-meter StackWise cable. In this example, the switches are stacked in a vertical rack or on a table. This configuration provides redundant connections.

Figure 2-1   *Data Stacking the Switches in a Rack or on a Table Using the 0.5-meter StackWise Cable*
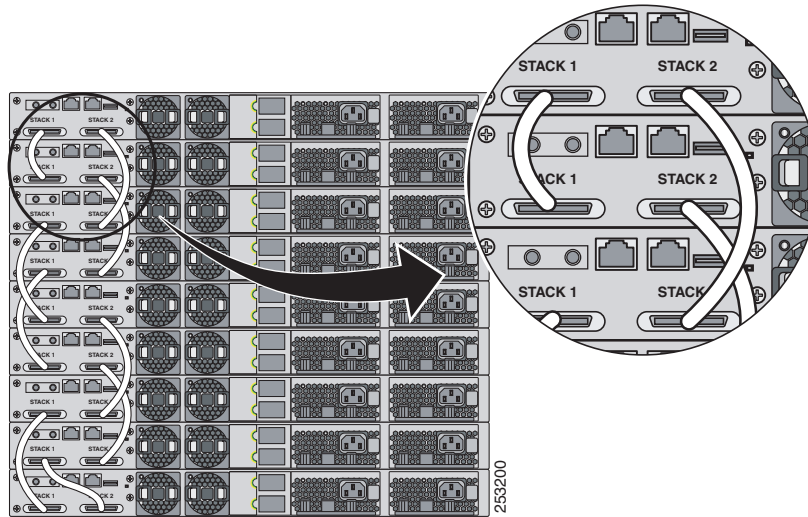
The configuration examples in Figure 2-2 use a 3-meter StackWise cable and the supplied 0.5-meter StackWise cable. Both examples show full-ring configurations that provide redundant connections.

Figure 2-2   *Data Stacking the Catalyst 3750-X Switches in a Rack or on a Table Using 0.5-meter and 3-meter StackWise Cables*
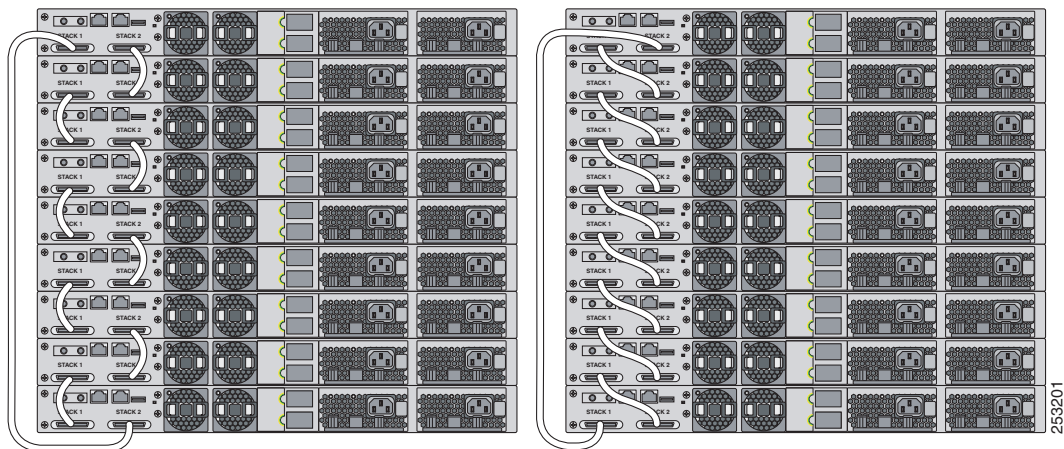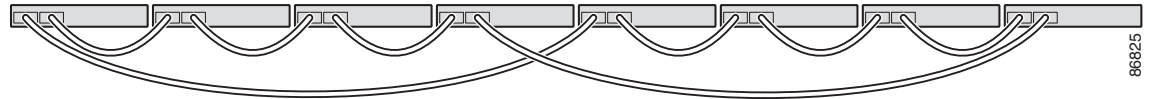
Figure 2-3 shows a recommended configuration when the switches are mounted side-by-side. Use the 1-meter and the 3-meter StackWise cables to connect the switches. This configuration provides redundant connections.

Figure 2-3   ***Data Stacking up to Eight Switches in a Side-by-Side Mounting***

Data Stack Bandwidth and Partitioning Examples

This section provides examples of data stack bandwidth and possible data stack partitioning.

Figure 2-4 shows a data stack of Catalyst 3750-X switches that provides full bandwidth and redundant StackWise cable connections.

Figure 2-4   ***Example of a Data Stack with Full Bandwidth Connections***
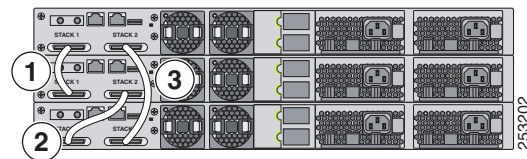
Figure 2-5 shows an example of a stack of Catalyst 3750-X switches with incomplete StackWise cabling connections. This stack provides only half bandwidth and does not have redundant connections.

Figure 2-5   ***Example of a Data Stack with Half Bandwidth Connections***
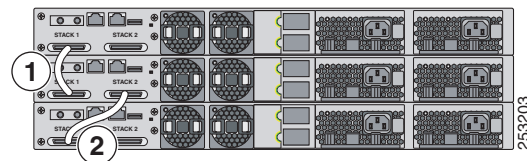
Figure 2-6 and Figure 2-7 show data stacks of Catalyst 3750-X switches with failover conditions. In Figure 2-6, the StackWise cable is bad in link 2. Therefore, this stack provides only half bandwidth and does not have redundant connections. In Figure 2-7, link 2 is bad. Therefore, this stack partitions into two stacks, and the top and bottom switches become stack masters.

Figure 2-6   ***Example of a Data Stack with a Failover Condition***
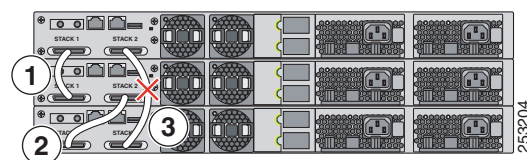
Figure 2-7   *Example of a Partitioned Data Stack with a Failover Condition*
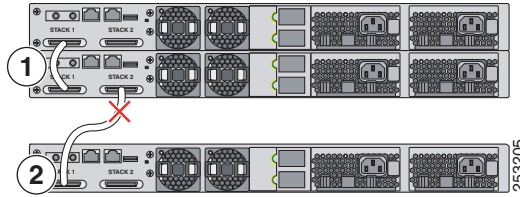
Power On Sequence for Switch Data Stacks

Consider these guidelines before you power on the switches in a stack:

- The sequence in which the switches are first powered on might affect the switch that becomes the stack master.

- If you want a particular switch to become the stack master, power on that switch first. This switch becomes the stack master and remains the stack master until a master re-election is required. After 1 minute, power on the other switches in the stack.

- If you have no preference as to which switch becomes the stack master, power on all the switches in the stack within 1 minute. These switches participate in the stack master election. Switches powered on after 1 minute do not participate in the election.

- Power off a switch before you add it to or remove it from an existing switch stack.

For conditions that can cause a stack master re-election or to manually elect the stack master, see the "Managing Switch Stacks" chapter in the switch software configuration guide on Cisco.com.

Planning a StackPower Stack (Catalyst 3750-X Switches)

Catalyst 3750-X switches can share power by using the StackPower feature.

StackPower Stacking Guidelines

You can configure a StackPower stack for either power sharing or redundancy. In power-sharing mode, the power of all the power supplies in the stack is aggregated and distributed among the stack members.

In redundant mode, when the total power budget of the stack is calculated, the wattage of the largest power supply is not included. That power is held in reserve and used to maintain power to switches and attached devices when one power supply fails. Following the failure of a power supply, the StackPower mode becomes power sharing.

Note   Power-sharing mode is the recommended configuration for Catalyst 3750-X switches. The Catalyst 3560-X switches support only redundant mode.

For general concepts and management procedures for switch power stacks, see the switch software configuration guide on Cisco.com.

Before connecting the switches in a power stack, keep in mind these guidelines:

- A switch power stack can include a maximum of four switches in a ring topology and nine switches in a star topology with the XPS-2200.

- Size of the switch and any optional power supply module. The 1100-W power-supply module is 1.5 inches longer than the other modules, and with the attached cable retention clip, it extends 3 inches from the switch chassis. Stacking switches with the same power-supply modules together makes it easier to cable the switches. For switch dimensions, see Appendix A, "Technical Specifications."

- Length of cable. Depending on the configurations that you have, you might need different-sized cables. If you do not specify the length of the StackPower cable, the 0.3 meter cable is supplied. If you need the 1.5 meter cable, you can order it from your Cisco supplier. For cable part numbers, see the "StackPower Connector (Catalyst 3750-X Switches)" section on page 1-20. The "StackPower Cabling Configurations" section on page 2-9 provides examples of recommended configurations.

- For rack-mounted switch stacks that are members of a data stack and a StackPower stack, see the "Switch Data Stacking Guidelines" section on page 2-5.

- For rack-mounted switch stacks connected to the XPS-2200, review this recommended sequence of events:

  - If you are using the XPS-2200, first install the XPS at the bottom of the stack. If needed, allow one RU space between the XPS and the first switch above to provide room for cabling.

  - Connect all the 12-pin XPS cables to the XPS-2200 as needed.

  - Rack-mount the switches. If you have the optional 1100-W power-supply module, first rack-mount the switch before installing the power-supply module.

  - Connect the XPS cable to the first switch above the XPS-2200. Connect the stack cables to the first switch above the XPS.

  - Connect the XPS cable to the second switch above the XPS-2200. Connect the stack cables to the second switch above the XPS.

  - Repeat until all devices are connected.

StackPower Cabling Configurations

This section describes the recommended cabling configurations for a StackPower stack. There are two types of StackPower cables. The cable in Figure 2-8 connects a Catalyst 3750-X switch to another 3750-X switch in a power stack or to an XPS-2200. The cable in Figure 2-9 connects a Catalyst 3750-X or 3560-X switch to an XPS-2200.

Note   All cable connectors are keyed and color-coded, as are the connections on the switches (See Figure 1-6 and Figure 1-7 on page 1-15).

Both cable types are available in two lengths.

Table 2-1   StackPower Cables

Part Number	Cable Type	Length
CAB-SPWR-30CM	Catalyst 3750-X StackPower cable	0.3 meter
CAB-SPWR-150CM	Catalyst 3750-X StackPower cable	1.5 meter

Figure 2-8   StackPower Cable for Use Only with Catalyst 3750-X Switches
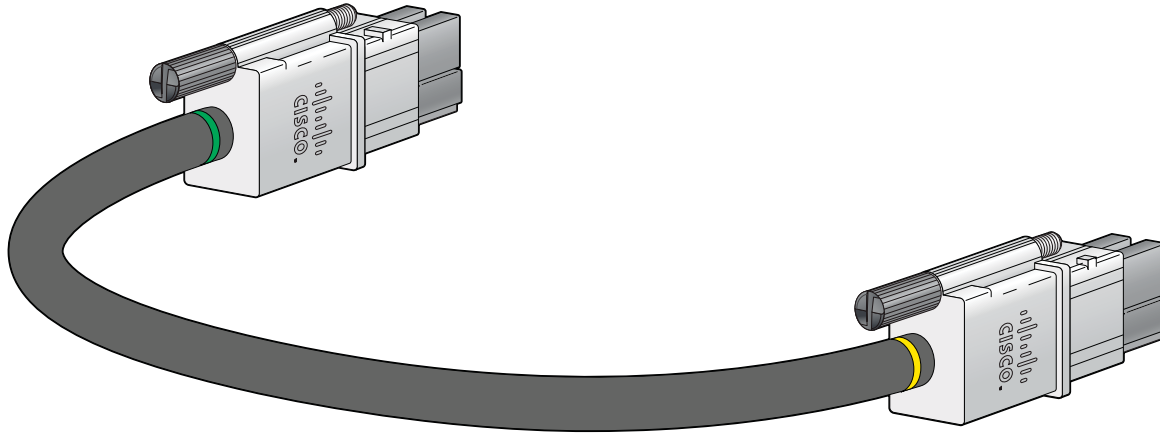
Table 2-2   XPS-2200 Cables

Part Number	Cable Type	Length
CAB-XPS-58CM	XPS-2200 connector cable	0.58 meter
CAB-XPS-150CM	XPS-2200 connector cable	1.5 meter

Figure 2-9   XPS-2200 Cable for Use with XPS-2200
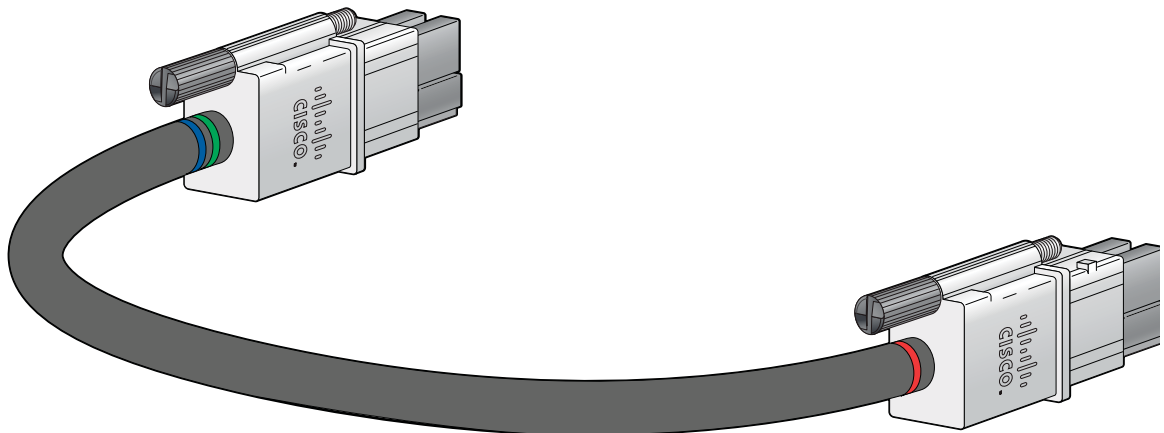
You can configure a ring power stack or use the XPS-2200 to configure a star topology.

Figure 2-10 shows a ring configuration using both of the supplied 0.3-meter StackPower cables and one 1.5-meter cable. In these examples, the switches are stacked in a vertical rack or on a table.

Figure 2-10   StackPower Ring Topology
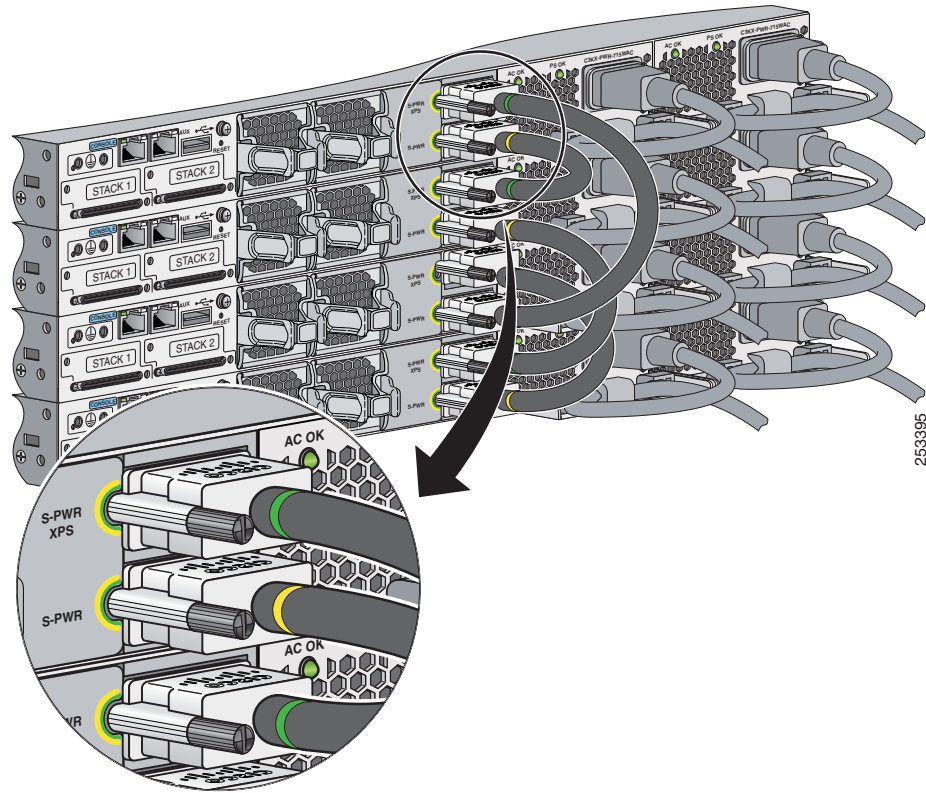
Figure 2-11 shows nine switches connected to an XPS-2200 expandable power supply in a star topology.

Figure 2-11   StackPower Star Topology Using the XPS-2200
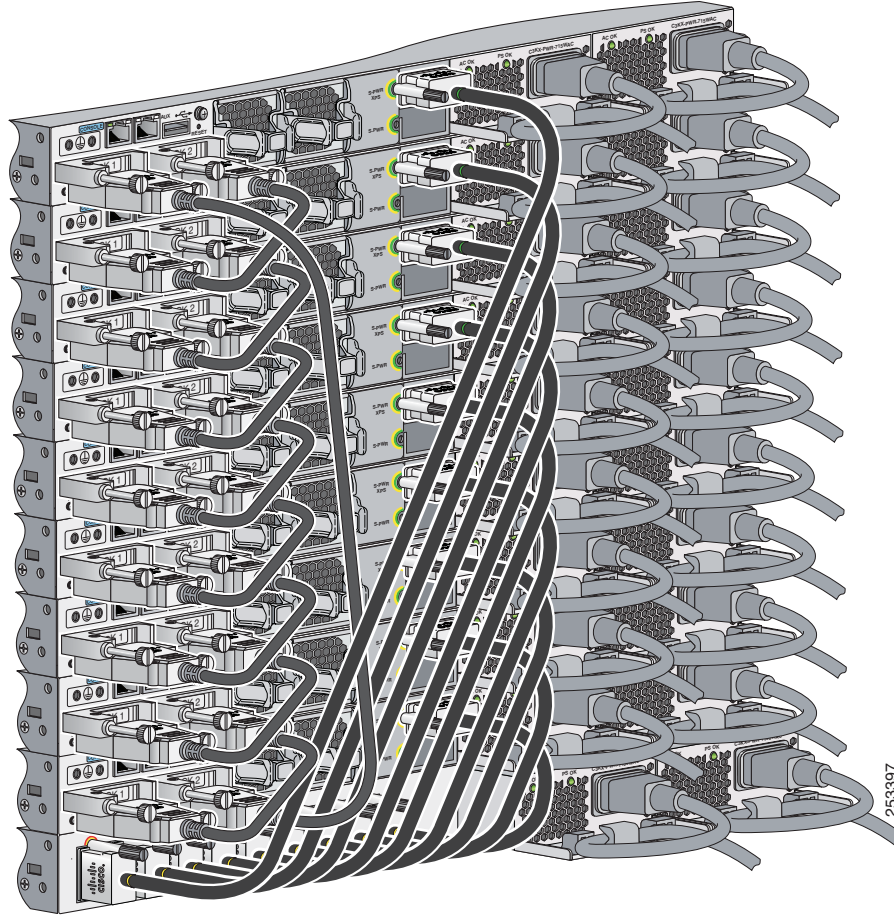
Figure 2-12 shows a nine-switch data stack configured with three power stacks. A power stack can include a maximum of four switches. You can configure multiple power stacks within a data stack, but a power stack that spans multiple data stacks is not supported.

Figure 2-12   Power Stacking Catalyst 3750-X Switches within a Switch Data Stack
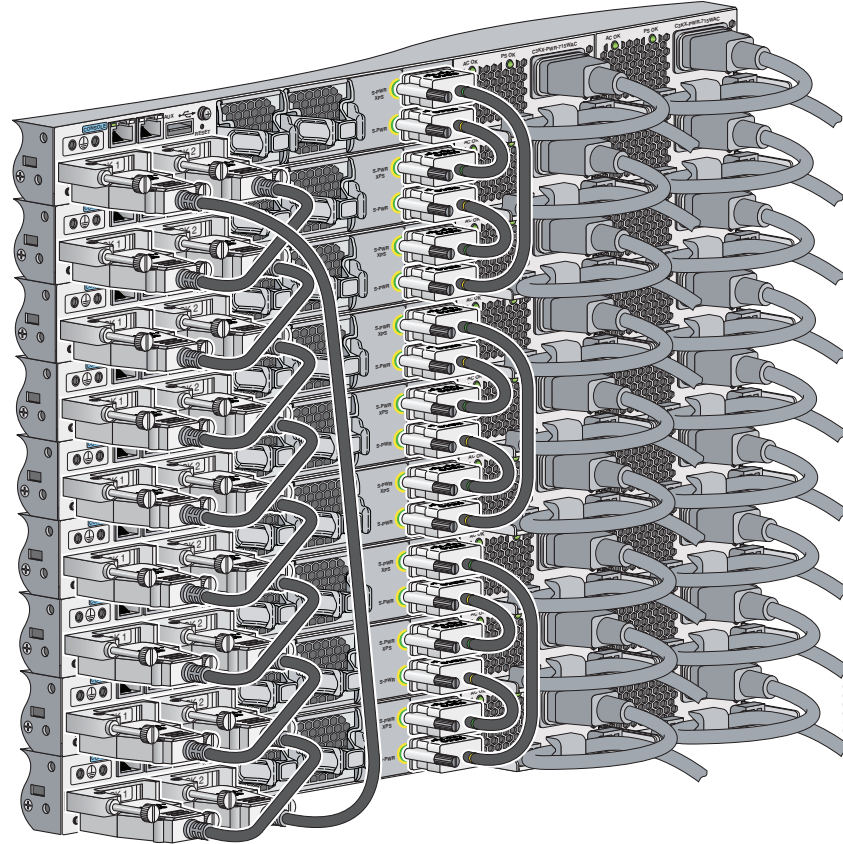
Figure 2-13 and Figure 2-14 are examples of recommended configurations when the switches are mounted side-by-side. Use the 1.5-meter StackPower cables to connect the switches. These configurations provide redundant connections.

Figure 2-13   PowerStack: Four Switches in a Side-by-Side Mounting Configuration
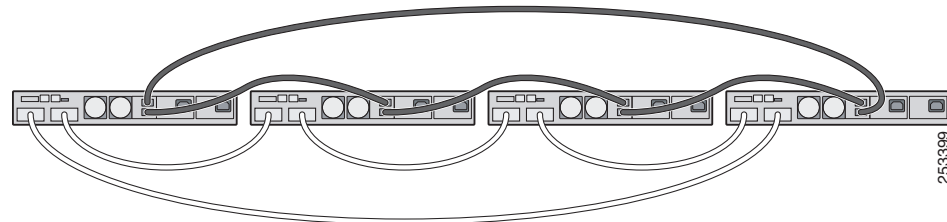
Figure 2-14   Power Stacking within a Nine-Switch Data Stack in a Side-by-Side Mounting Configuration
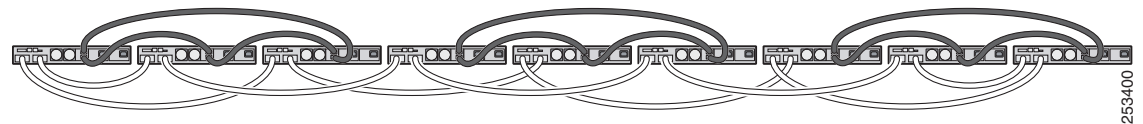
StackPower Partitioning Examples

Figure 2-15 and Figure 2-16 show StackPower stacks of Catalyst 3750-X switches with failover conditions. In Figure 2-15, the StackPower cable 2 is faulty. Therefore, this stack does not provide redundancy.

Figure 2-15　　*Example of a StackPower Stack with a Failover Condition*
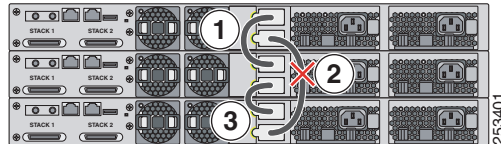
In Figure 2-16, StackPower port B on the center switch has failed and this stack partitions into two stacks. The top two switches share power, and the bottom switch is now a separate stack.

Figure 2-16　　*Example of a Partitioned StackPower Stack with a Failover Condition*
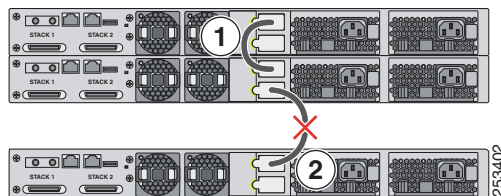
Installing the Switch

- Rack-Mounting, page 2-14
- Table- or Shelf-Mounting, page 2-20
- After Installing the Switch, page 2-21

The illustrations shown in this section show the Catalyst 3750-X-48 PoE switch as an example. You can install the Catalyst 3750-X and 3560-X switches following the same procedures.

Rack-Mounting

To install the switch in a 19-inch rack, follow the instructions described in this section.

Warning   **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**

- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**

- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006

Installing the switch in other rack types requires an optional bracket kit not included with the switch. Figure 2-17 shows the standard 19-inch brackets and optional mounting brackets and part numbers.

Figure 2-17   *Rack-Mounting Brackets*

253206
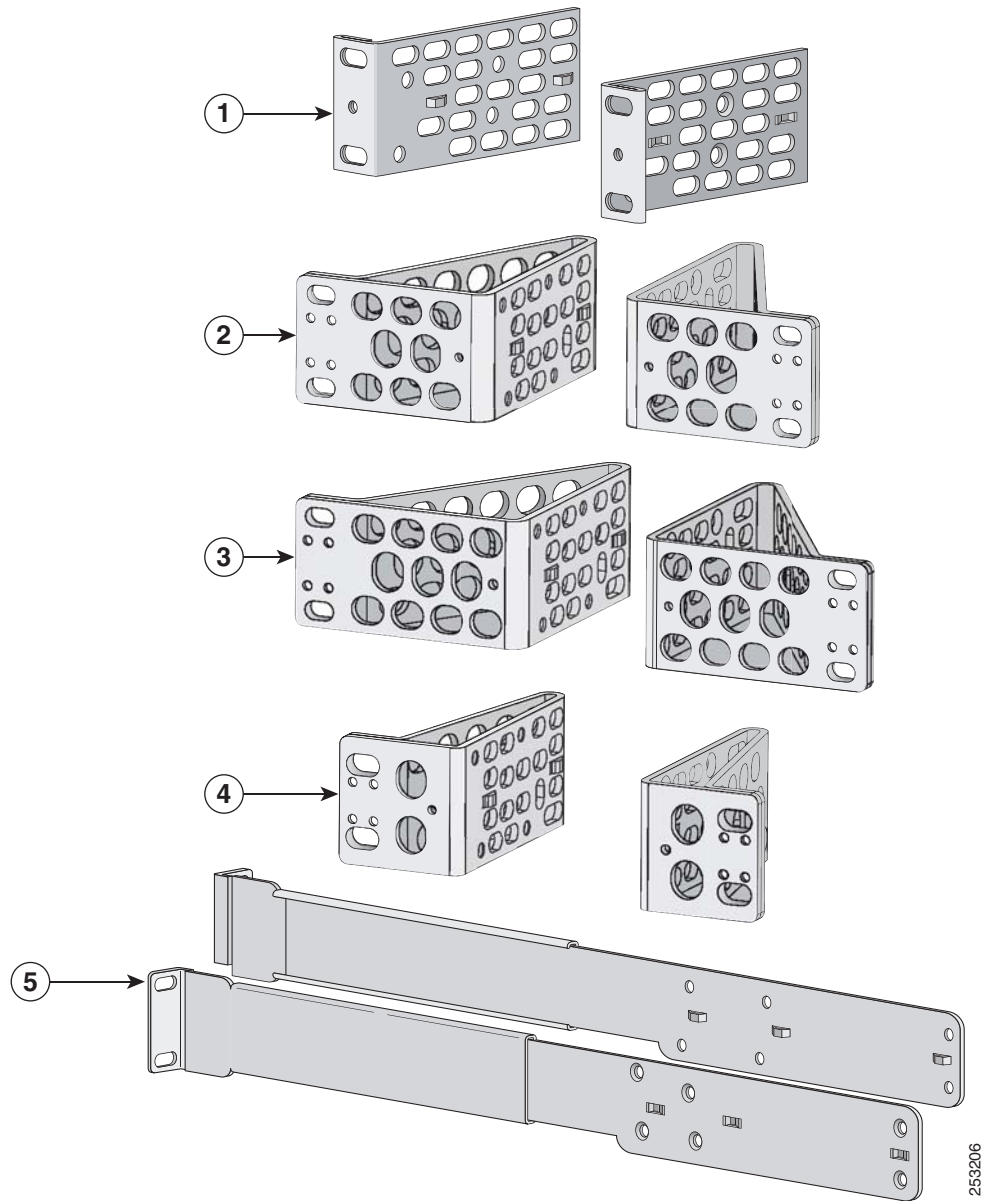
1	19-inch brackets, part number 700-29656-01
2	23-inch brackets, part number 700-31900-01
3	23/24-inch brackets, part number 700-31901-01
4	ETSI brackets, part number 700-31899-01
5	Extension rails and brackets for four-point mounting, kit part number 53-3408-01

Attaching the Rack-Mount Brackets

To install the switch in a rack, use four Phillips flat-head screws to attach the long side of the brackets to the switch for the front- or rear-mounting positions (Figure 2-18). Use three screws to attach the brackets for the mid-mounting position.

Figure 2-18   Attaching Brackets for 19-inch Racks
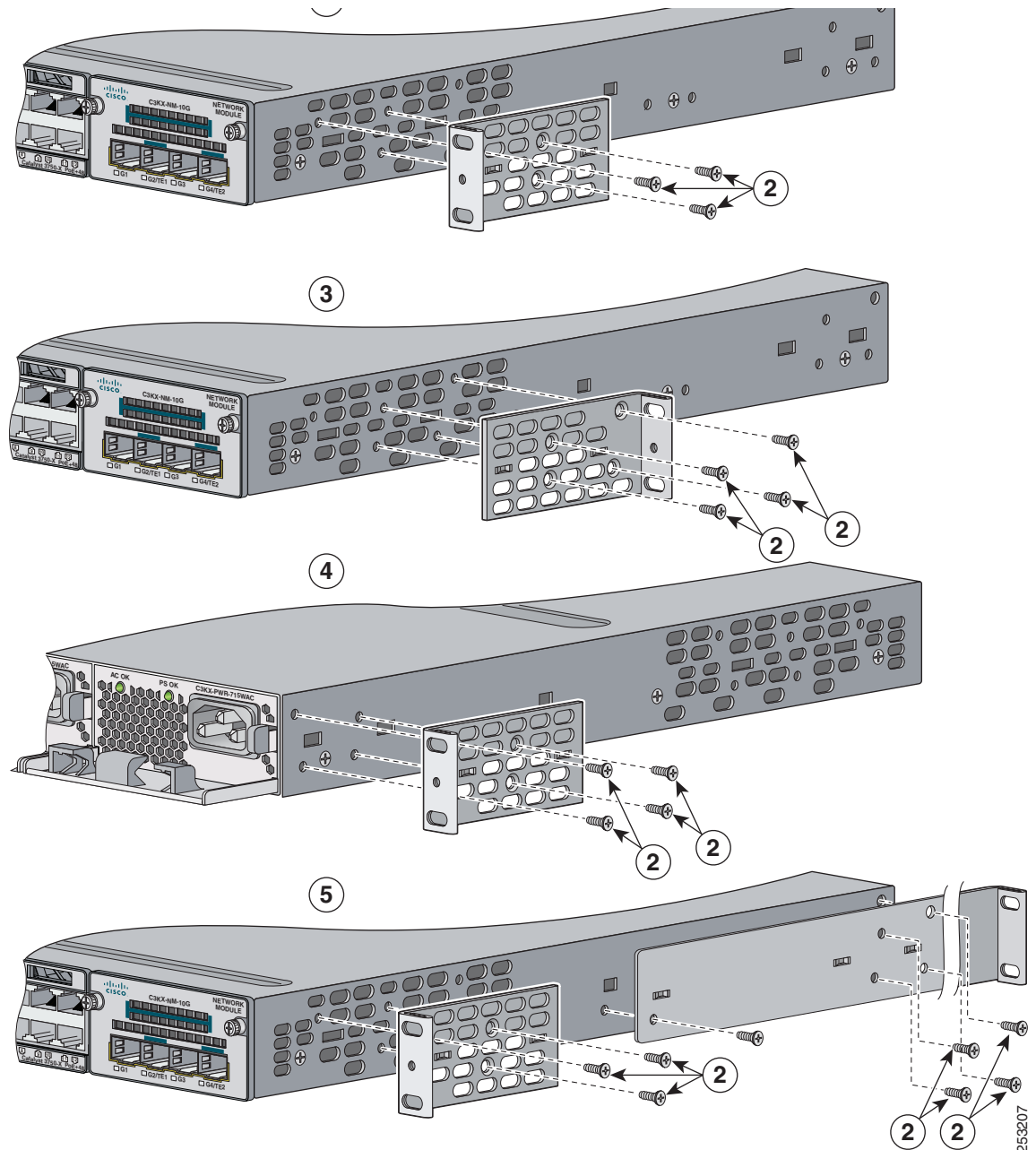
1	Front-mounting position	4	Rear-mounting position
2	Number-8 Phillips flat-head screws	5	Four-point mounting positions
3	Mid-mounting position		

Mounting the Switch in a Rack

After the brackets are attached to the switch, use the supplied Phillips machine screws to attach the brackets to the rack (Figure 2-19). Use the black Phillips machine screw to attach the cable guide to the left or right bracket.

When you complete the switch installation, see the "After Installing the Switch" section on page 2-21 for more information switch configuration.

Figure 2-19   Mounting the Switch in a Rack
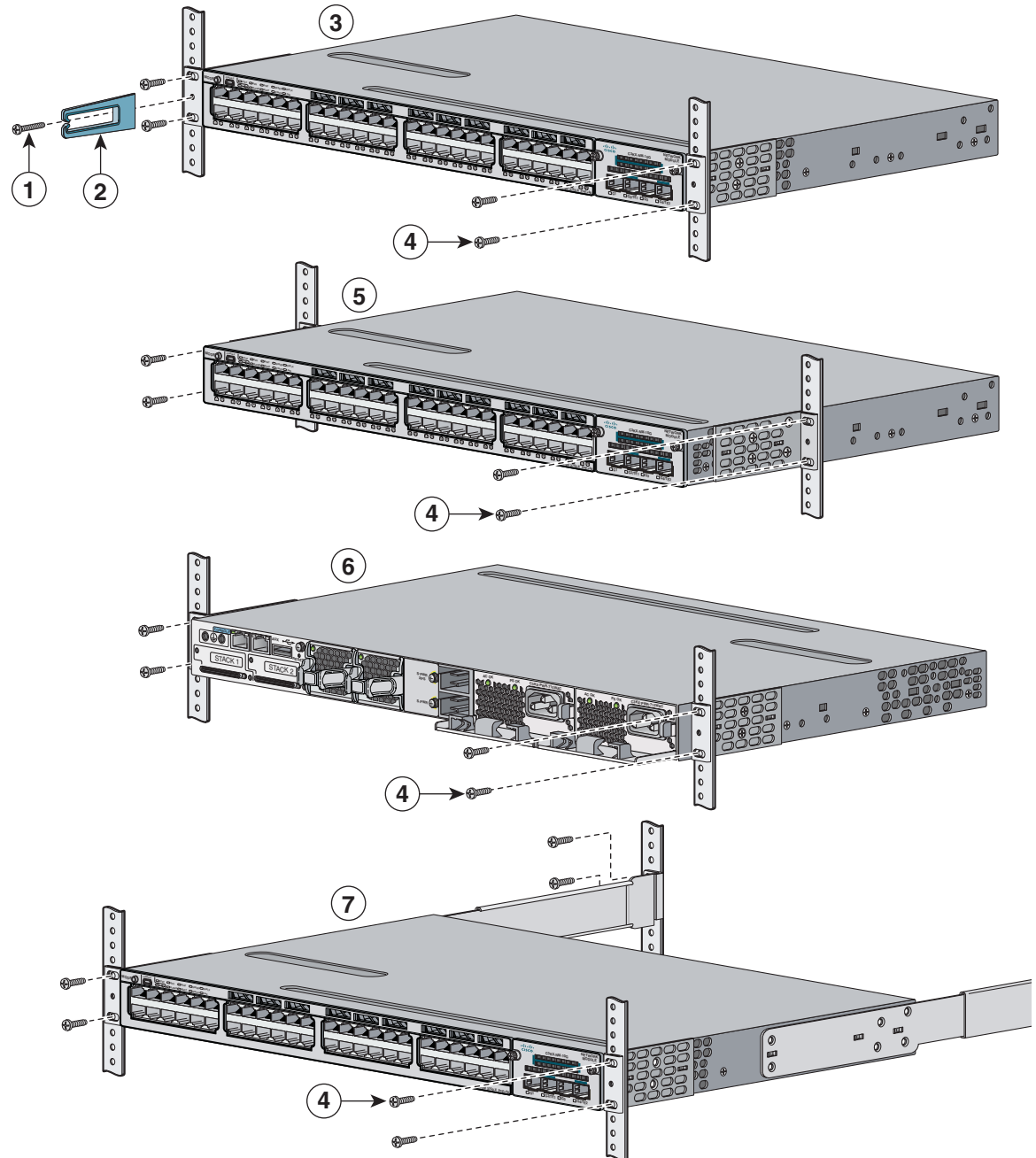
1	Phillips machine screw, black	**5**	Mid-mounting position
2	Cable guide	**6**	Rear-mounting position
3	Front-mounting position	**7**	Four-point mounting position
4	Number-12 or number-10 Phillips machine screws		

When you complete the switch installation, see the "After Installing the Switch" section on page 2-21 for more information about switch configuration.

Table- or Shelf-Mounting

To install the switch on a table or shelf, locate the adhesive strip with the rubber feet in the mounting-kit envelope. Attach the four rubber feet to the recessed areas on the bottom of the chassis (See Figure 2-20).

Figure 2-20   Attaching the Adhesive Pads for Table- or Shelf-Mounting
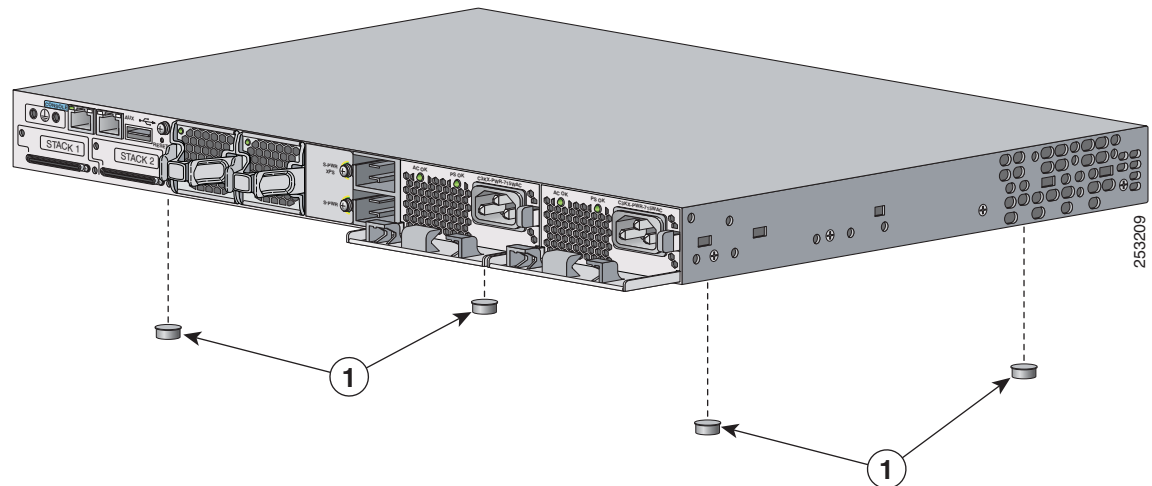
1	Adhesive pads

You can also attach the brackets for a 19-inch rack as shown in Figure 2-21 to secure the switch to a shelf or table.

Figure 2-21   Using Brackets for Table- or Shelf-Mounting
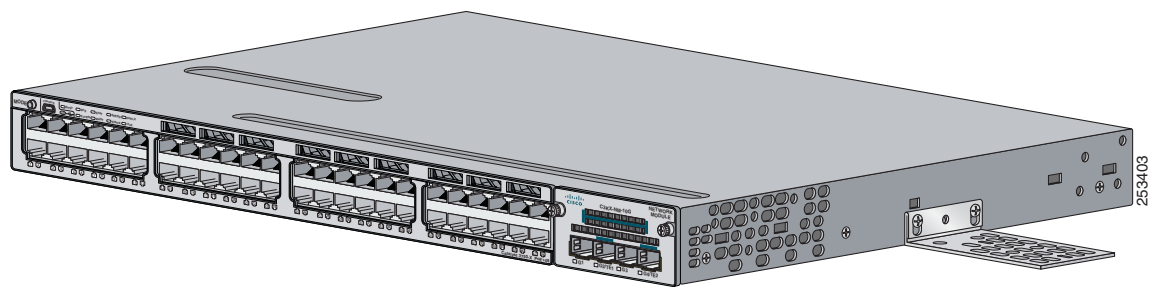
⚠ **Caution**   Do not wall-mount the switch.

When you complete the switch installation, see the "After Installing the Switch" section on page 2-21 for more information switch configuration.

After Installing the Switch

After the switch is installed, you might need to:

- Configure the switch by running Express Setup to enter the initial switch configuration. For instructions, see the switch getting started guide that shipped with the switch and also on Cisco.com.

- Use the CLI setup program to enter the initial switch configuration. See Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

- Connect to the front-panel ports. See the "Installing a Network Module in the Switch" section on page 2-23 and the "Connecting Devices to the Ethernet Ports" section on page 2-27.

Connecting to the StackWise Ports (Catalyst 3750-X Switches)

Before connecting the StackWise cables, review the "Planning a Switch Data Stack (Catalyst 3750-X Switches)" section on page 2-4. Always use a Cisco-approved StackWise cable to connect the switches.

Step 1   Remove the dust covers from the StackWise cables and StackWise ports, and store them for future use.

Step 2   Use the window in the StackWise cable to align the connector correctly. Connect it to the StackWise port on the switch rear panel (Figure 2-22). Using a ratcheting torque screwdriver, tighten the retainer screws to 5 lbf-in. (80 ozf-in.).

Step 3   Connect the other end of the cable to the connector on the other switch, and tighten the retainer screws to 5 lbf-in. (80 ozf-in.). Avoid overtightening the screws.

Figure 2-22   Connecting the StackWise Cable in a StackWise Port

⚠
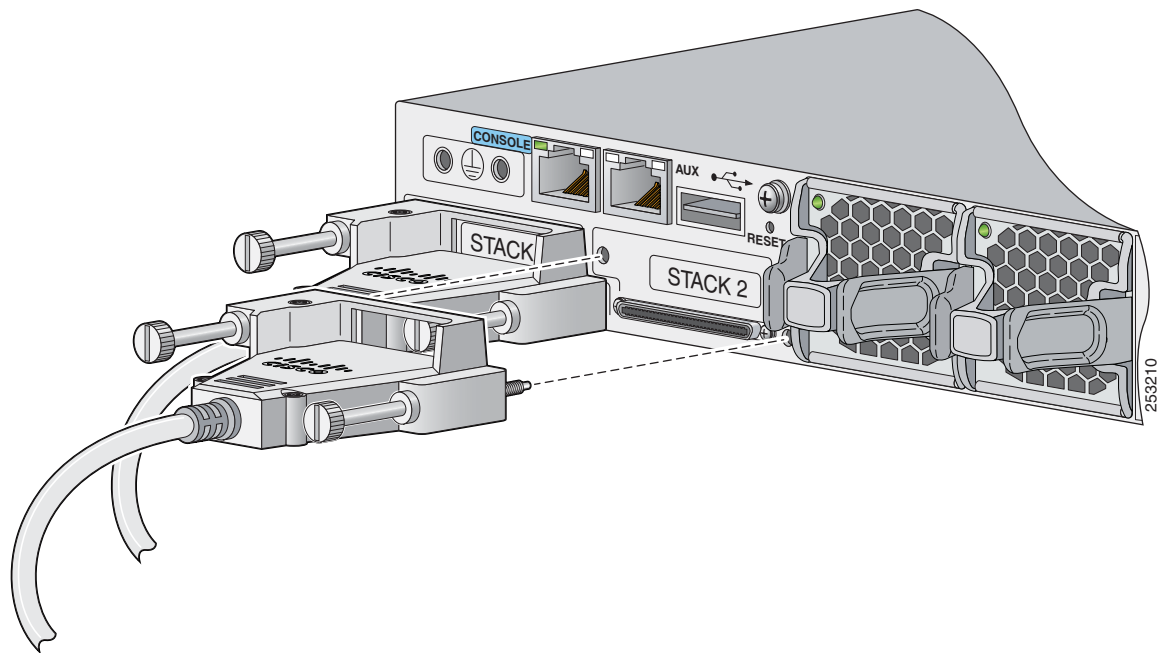
Caution   Removing and installing the StackWise cable can shorten its useful life. Do not remove and insert the cable more often than is absolutely necessary.

When you need to remove the StackWise cable from the connector, make sure to fully unscrew the correct screws. When the connectors are not being used, replace the dust covers.
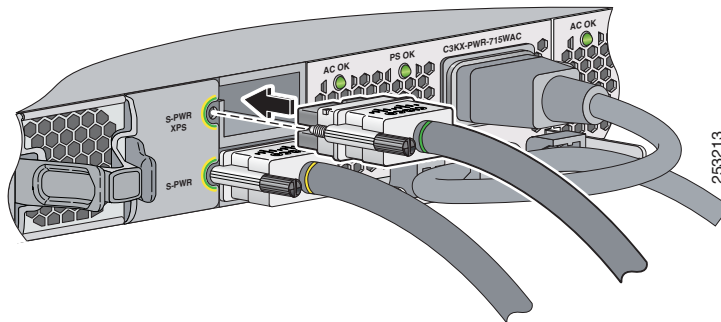
Connecting to the StackPower Ports (Catalyst 3750-X Switches)

Before connecting the StackPower cables, review the "Planning a StackPower Stack (Catalyst 3750-X Switches)" section on page 2-8. Always use a Cisco-approved StackPower cable to connect the switches. To prevent misconfiguration, the StackPower ports on the switch and the XPS-2200 are keyed and have colored stripes that match the keying and stripes on the StackPower cable connectors.

Follow these steps to connect the StackPower cable to the StackPower ports:

Step 1   Remove the dust covers from the StackPower cable connectors.

Step 2   Connect the end of the cable with a green stripe to either StackPower connector on the first switch. Align the connector correctly, and connect the cable to a StackPower port on the switch rear panel. (Figure 2-23).

Step 3   Connect the end of the cable with the yellow stripe to another Catalyst 3750-X switch (to configure StackPower power sharing) or to an XPS-2200 power supply (to configure redundancy).

Step 4   Hand-tighten the captive screws to secure the StackPower connectors in place.

Figure 2-23   Connecting the StackPower Cable to a StackPower Port
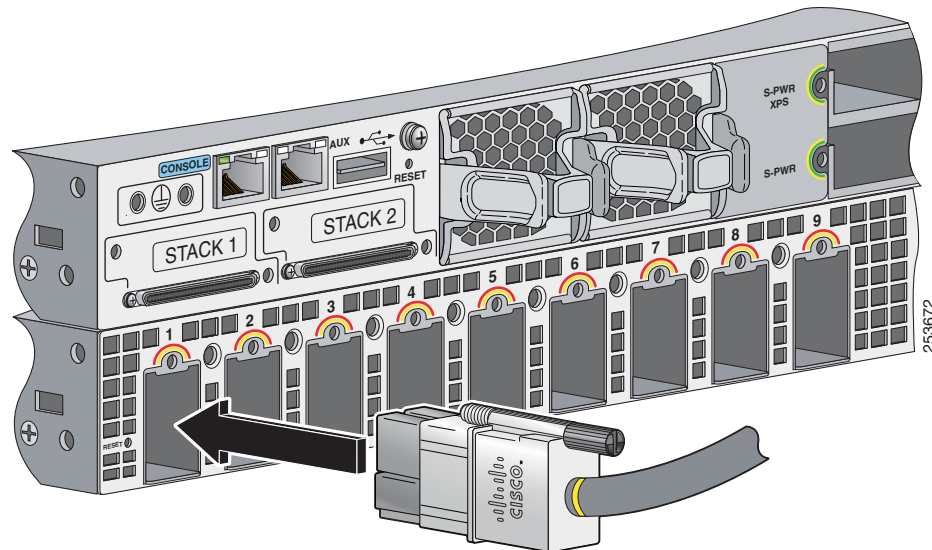

⚠

Caution   Removing and installing the StackPower cable can shorten its useful life. Do not remove and insert the cable more often than necessary.

Connecting the StackPower Ports to the XPS-2200

Before connecting the StackPower cables, review the "Planning a StackPower Stack (Catalyst 3750-X Switches)" section on page 2-8. Always use a Cisco-approved StackPower cable to connect the switches. To prevent misconfiguration, the StackPower ports on the switch and the XPS-2200 are keyed and have colored stripes that match the keying and stripes on the StackPower cable ends.

Step 1 Connect the end of the cable with a green stripe to the connector marked XPS on the switch. Align the connector correctly, and insert the end of the cable with a green stripe into an XPS port on the switch rear panel.

Step 2 Connect the end of the cable with a red or yellow stripe to an XPS-2200 power supply. (Figure 2-24)

Step 3 Hand-tighten the captive screws to secure the StackPower connectors in place.

Figure 2-24   Connecting the StackPower Cable to an XPS-2200 Port

⚠️

Caution Removing and installing the StackPower cable can shorten its useful life. Do not remove and insert the cable more often than necessary.

Installing a Network Module in the Switch

These sections describe how to install and remove 1-Gigabit Ethernet and 10-Gigabit Ethernet network modules that provide uplink ports for the switch or the blank module, which provides no uplink ports. See the "Network Modules" section on page 1-4.

✎

Note There must be a supported network module in the network module slot. If no uplink ports are required, insert a blank network module. An empty slot generates error messages.

The network module is hot-swappable. If you remove a module, replace it with another network module.

Use only Cisco network modules and SFP or SFP+ modules with the switch. For information about supported SFP modules, see the "SFP and SFP+ Modules" section on page 1-5.

For more information about installing, removing, cabling, and troubleshooting network modules, see the module documentation on Cisco.com. For module cable specifications, see Appendix B, "Connector and Cable Specifications."

Tools and Equipment

You need to supply a number-2 Phillips screwdriver.

Installing Network Modules

When installing network modules, observe these general precautions:

- Do not remove the EMC plug from the 10-Gigabit Ethernet slot until you are ready to install an SFP or SFP+ module. Either a module or a dust plug must be installed in the slot at all times.

- Do not remove the dust plugs from the fiber-optic SFP modules or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.

- Removing and installing a network module can shorten its useful life. Do not remove and insert any network module more often than necessary.

- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.

Step 2 Remove the module from the protective packaging.

Step 3 Remove the 10-Gigabit Ethernet module slot EMC plug and save.

⚠

Caution Verify the correct orientation of your module before inserting it into the slot. Incorrect insertion can damage the module.

Step 4 Position the module face up to install in the module slot. See Figure 2-25. Slide the module into the opening until the back of the module faceplate is flush with the switch faceplate. Fasten the captive screws to secure the network module in place.

⚠

Caution Do not insert or remove a network module with attached fiber-optic cables. A module interface might change to an error-disabled state when a network module is inserted or removed with connected fiber-optic cables. If the interface is in an error-disabled state, you can re-enable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

Figure 2-25   Installing the Network Module in the Switch
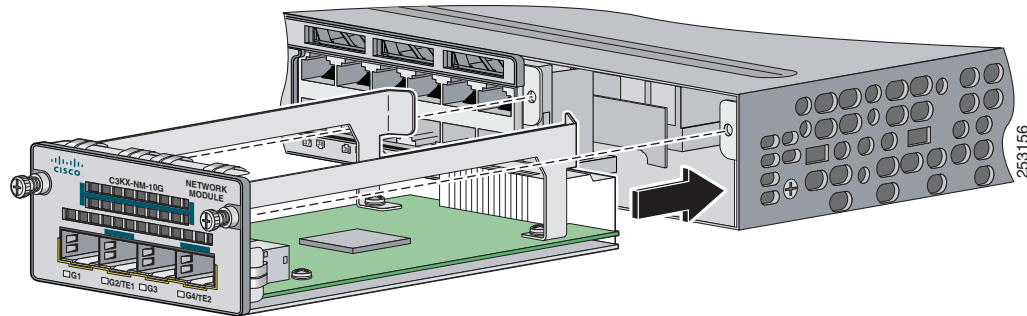
⚠ **Caution**   Do not install the converter module with connected SFP modules or cables. Always remove any cables and modules before installing the converter module in the slot.

Removing a Network Module

Step 1   Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.

⚠ **Caution**   Do not remove the network module with installed SFP modules or cables. Always remove any cables and modules before removing the network module from the slot.

Step 2   Disconnect the cables from the SFP module.

Step 3   Remove the SFP modules from the network module.

Step 4   Loosen the captive screws that hold the network module in place.

Step 5   Carefully press the tab on the right side of the network module to release it from the slot. Grasp the edges of the module, and carefully slide it out of the slot.

Step 6   Install a replacement network module or a blank module in the slot.

Step 7   Place the module that you removed in an antistatic bag or other protective environment.

Installing SFP and SFP+ Modules

This section describes how to install and remove SFP modules in the network module. You must have a network module installed in the switch to use SFP modules.

See the "SFP and SFP+ Modules" section on page 1-5 and the switch release notes on Cisco.com for the list of SFP modules that the switch supports. Use only Cisco SFP modules on the switch.

For more information about installing, removing, cabling, and troubleshooting SFP modules, see the module documentation that shipped with your device. For module cable specifications, see Appendix B, "Connector and Cable Specifications."

Installing an SFP Module

Observe these general precautions:

Warning   **Class 1 laser product.** Statement 1008

- Do not remove the dust plugs from the SFP modules or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.

- Removing and installing an SFP module can shorten its useful life. Do not remove and insert any SFP module more often than necessary.

- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.

Caution   To avoid damage to the network module, first install the network module in the switch before installing the SFP modules. See the "Installing a Network Module in the Switch" section on page 2-23.

Step 1   Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.

Step 2   Find the send (TX) and receive (RX) markings that identify the top side of the SFP module.

On some SFP modules, the send and receive (TX and RX) markings might be replaced by arrows that show the direction of the connection, either send or receive (TX or RX).

Step 3   If the SFP module has a bale-clasp latch, move it to the open, unlocked position.

Step 4   Align the module in front of the slot opening, and push until you feel the connector snap into place.

Figure 2-26   Installing an SFP Module in the Network Module
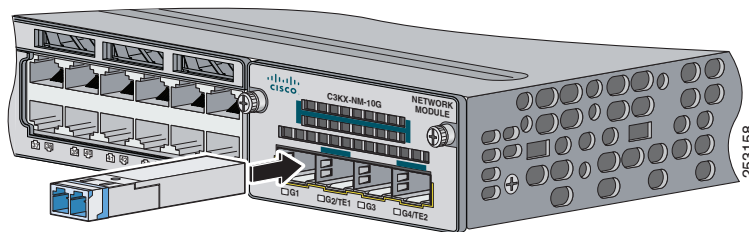
Step 5   If the module has a bale-clasp latch, close it to lock the SFP module in place.

Step 6   Remove the SFP dust plugs and save.

Step 7   Connect the SFP cables.

Figure 2-27   Network Module with SFP Modules Installed
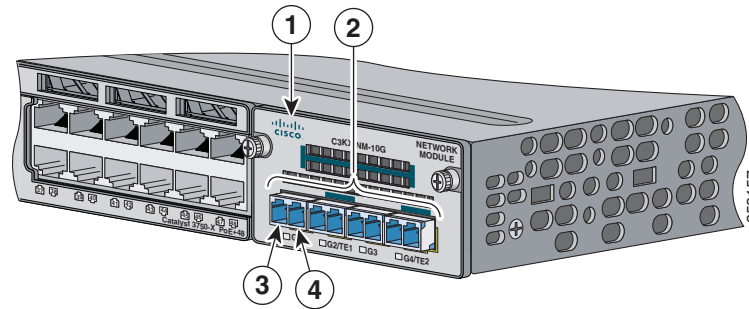
1	Network module	**3**	Send (TX) optical bore
2	SFP modules	**4**	Receive (RX) optical bore

Removing an SFP Module

Step 1   Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.

Step 2   Disconnect the cable from the SFP module. For reattachment, note which cable connector plug is send (TX) and which is receive (RX).

Step 3   Insert a dust plug into the optical ports of the SFP module to keep the optical interfaces clean.

Step 4   If the module has a bale-clasp latch, pull the bale out and down to eject the module. If the bale-clasp latch is obstructed and you cannot use your finger to open it, use a small, flat-blade screwdriver or other long, narrow instrument to open the bale-clasp latch.

Step 5   Grasp the SFP module, and carefully remove it from the module slot.

Step 6   Place the removed SFP module in an antistatic bag or other protective environment.

Connecting Devices to the Ethernet Ports

⚠

Caution   Category 5e and Category 6 cables can store high levels of static electricity. Always ground the cables to a suitable and safe earth ground before connecting them to the switch or other devices.

10/100/1000 Ethernet Port Connections

The 10/100/1000 Ethernet ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 100BASE-TX and 1000BASE-T traffic requires Category 5, Category 5e, or Category 6 UTP cable. The 10BASE-T traffic can use Category 3 or Category 4 cable.

The autonegotiation feature is enabled by default on the switch. At this setting, the switch ports configure themselves to operate at the speed of attached device. If the attached device does not support autonegotiation, you can explicitly set the switch port speed and duplex parameters. To maximize performance, either let the ports autonegotiate both speed and duplex, or set the port speed and duplex parameters on both ends of the connection.

For simplified cabling, the automatic medium-dependent interface crossover (auto-MDIX) feature is enabled by default on the switch. With auto-MDIX enabled, the switch detects the required cable type for copper Ethernet connections and configures the interface accordingly. Therefore, you can use either a crossover or a straight-through cable for connections to a switch 10/100/1000 Ethernet port regardless of the type of device on the other end of the connection.

See the switch software configuration guide or the switch command reference on Cisco.com for more information about enabling or disabling autonegotiation and auto-MDIX.

If auto-MDIX is disabled, use the guidelines in Table 2-3 to select the correct cable for connecting the switch 10/100/1000 Ethernet ports to other devices. See the "Cable and Adapter Specifications" section on page B-5 for cable-pinout descriptions.

Table 2-3   Recommended Ethernet Cables (When Auto-MDIX is Disabled)

Device	Crossover Cable[1]	Straight-Through Cable[1]
Switch to switch	Yes	No
Switch to hub	Yes	No
Switch to computer or server	No	Yes
Switch to router	No	Yes
Switch to IP phone	No	Yes

1. 100BASE-TX and 1000BASE-T traffic requires twisted four-pair, Category 5, Category 5e, or Category 6 cable. 10BASE-T traffic can use Category 3 or Category 4 cable.

PoE+ Port Connections

The 10/100/1000 PoE ports have the same autonegotiation settings and cabling requirements that are described in the "10/100/1000 Ethernet Port Connections" section on page 2-28. These ports can provide PoE or PoE+ inline power.

PoE inline power supports devices compliant with the IEEE 802.3af standard, as well as prestandard Cisco IP Phones and Cisco Aironet Access Points. Each port can deliver up to 15.4 W of PoE.

PoE+ inline power supports devices compliant with the IEEE 802.3at standard, by delivering up to 30 W of PoE+ power per port to all switch ports.

See Table 1-17 on page 1-18 for the power supply modules required to support PoE and PoE+ on 24- and 48-port switches.

To access a PoE planning tool, use the Cisco Power Calculator available on Cisco.com:

http://tools.cisco.com/cpc/launch.jsp

You can use this application to calculate the power supply requirements for a specific PoE configuration. Enter the number and types of powered devices that you plan to attach to the switch, and the calculator shows the PoE or PoE+ power required and the system power consumption.

You must be a registered Cisco.com user to access the Cisco Power Calculator. If you do not have a user ID or password, you can register:

http://tools.cisco.com/RPF/register/register.do

For more information about the required power-supply module and the PoE specifications, see the "Power Supply Modules" section on page 1-17 and Appendix A, "Technical Specifications."

Note   Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switches by a crossover cable.

Caution   PoE faults are caused when noncompliant cabling or powered devices are connected to a PoE port. Use only standard-compliant cabling to connect Cisco prestandard IP Phones, wireless access points, or IEEE 802.3af-compliant devices to PoE ports. A cable or device that causes a PoE fault must be removed from the network.

Warning   **Voice over IP (VoIP) service and the emergency calling service do not function if power fails or is disrupted. After power is restored, you might have to reset or reconfigure equipment to regain access to VoIP and the emergency calling service. In the USA, this emergency number is 911. You need to be aware of the emergency number in your country.** Statement 361

Warning   **Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security.** Statement 1072

Where to Go Next

If the default configuration is satisfactory, the switch does not need further configuration. You can use any of these management options to change the default configuration:

- Start the device manager, which is in the switch memory, to manage individual and standalone switches. This is an easy-to-use web interface that offers quick configuration and monitoring. You can access the device manager from anywhere in your network through a web browser. For more information, see the switch getting started guide and the device manager online help.

- Start the Network Assistant application, which is described in the *Getting Started with Cisco Network Assistant* guide. Through this GUI, you can configure and monitor a switch cluster or an individual switch.

- Use the CLI to configure the switch as a member of a cluster or as an individual switch from the console. See the switch command reference on Cisco.com for information on using the CLI with the switch.

- Start an SNMP application such as the CiscoView application.

Power Supply and Fan Module Installation

Power Supply Module Overview

The switch operates with either one or two active power supply modules or with power supplied by an expandable power supply, XPS-2200. A Catalyst 3750-X switch that is part of a StackPower stack operates with power supplied by other stack switches.

You can use two AC modules, two DC modules, one AC and one DC module, or one module and a blank cover.

All power supply modules have internal fans. All switches ship with a blank cover in the second power supply slot.

The XPS-2200 operates in two modes:

- In StackPower mode, it supplies power to the switches in the power stack (only Catalyst 3750-X switches with IP Base image).

- In expandable power supply mode, it supplies power to a switch when the switch power supply is removed or fails. When you install or replace a power supply module, the switch software polls the device. After polling, the power supply module provides power to the switch, and the XPS-2200 is available to power other devices.

Table 3-1 describes the supported internal power supply modules.

Table 3-1   Power Supply Module Part Numbers and Descriptions

Part Number	Description
C3KX-PWR-1100WAC= C3KX-PWR-1100WAC-JP=[1]	1100-W AC power supply module
C3KX-PWR-715WAC=	715-W AC power supply module
C3KX-PWR-350WAC=	350-W AC power supply module
C3KX-PWR-440WDC=	440-W DC power supply module
C3KX-PSBAY-BLNK	Blank cover

1. This module is used only in Japan.

Table 3-2   Power Supply Modules Used with PoE and PoE+ Switch Models

Power Supply Module	48-Port PoE+ Switch[1]	24-Port PoE+ Switch	48-Port Non-PoE+ Switch	24-Port Non-PoE+ Switch
C3KX-PWR-1100WAC= C3KX-PWR-1100WAC-JP=[2]	Primary or spare	Spare	Spare	Spare
C3KX-PWR-715WAC=	Spare	Primary or spare	Spare	Spare
C3KX-PWR-350WAC=	Spare	Spare	Primary or spare	Primary or spare
C3KX-PWR-440WDC=	Primary or spare	Primary or spare	Primary or spare	Primary or spare
C3KX-PSBAY-BLNK	Blank module	Blank module	Blank module	Blank module

1. For full 15.4W support on a 48-port PoE+ switch, you must use a C3KX-PWR-1100WAC power supply module.

2. This module is used only in Japan.

Table 3-3   Switch Power Supply Requirements for PoE and PoE+

PoE Option	24-Port Switch	48-Port Switch
PoE (up to 15.4 W per port)	one 715-W power supply two 440-W DC power supplies	one 1100-W power supply
PoE+ (up to 30 W per port)	one 1100-W power supply	one 1100-W power supply plus one 715-W power supply or two 1100-W power supplies

Note   A 48-port switch with one 715-W power supply provides up to 7.7 W of PoE to all ports.

The 350-W and 715-W AC power supply modules are autoranging units that support input voltages between 100 and 240 VAC. The 1100-W power supply module is an autoranging unit that supports input voltages between 115 and 240 VAC. The 440-W DC power supply module has dual input feeds (A and B) and supports input voltages between 36 and 72 VDC. The output voltage range is 51 to 57 V.

Each AC power supply module has a power cord for connection to an AC power outlet. The 1100-W and 715-W modules use a 16-AWG cord (only North America). All other modules use an 18-AWG cord. The DC power supply module must be wired to a DC power source.

Note Only the DC power module is NEBS-compliant.

Figure 3-1 to Figure 3-4 show the power supply modules.

Figure 3-1   *1100-W AC Power Supply*
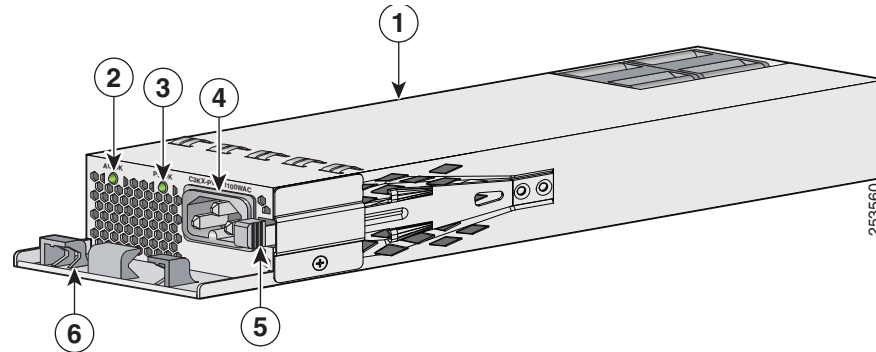
1	1100-W AC power supply module	**4**	AC power cord connector
2	AC OK LED	**5**	Release latch
3	PS OK LED	**6**	Power cord retainer

Figure 3-2   *715-W AC Power Supply Module*
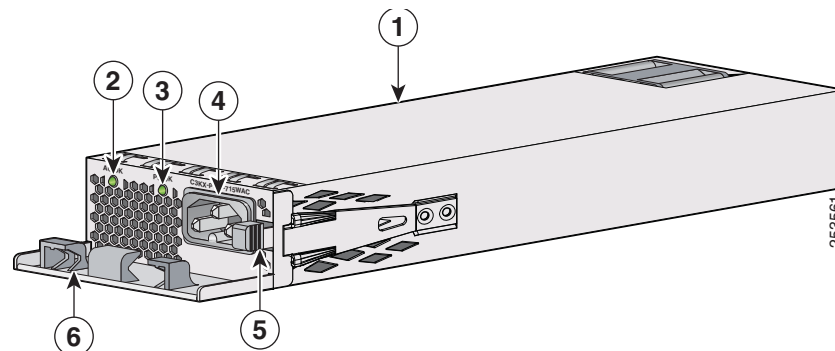
1	715-W AC power supply module	**4**	AC power cord connector
2	AC OK LED	**5**	Release latch
3	PS OK LED	**6**	Power cord retainer

Figure 3-3   *350-W AC Power Supply Module*
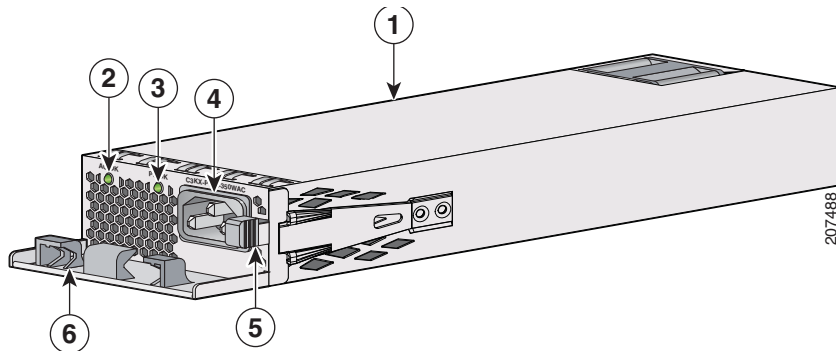
1	350-W AC power supply module	4	AC power cord connector
2	AC OK LED	5	Release latch
3	PS OK LED	6	Power cord retainer

Figure 3-4   *440-W DC Power Supply Module*
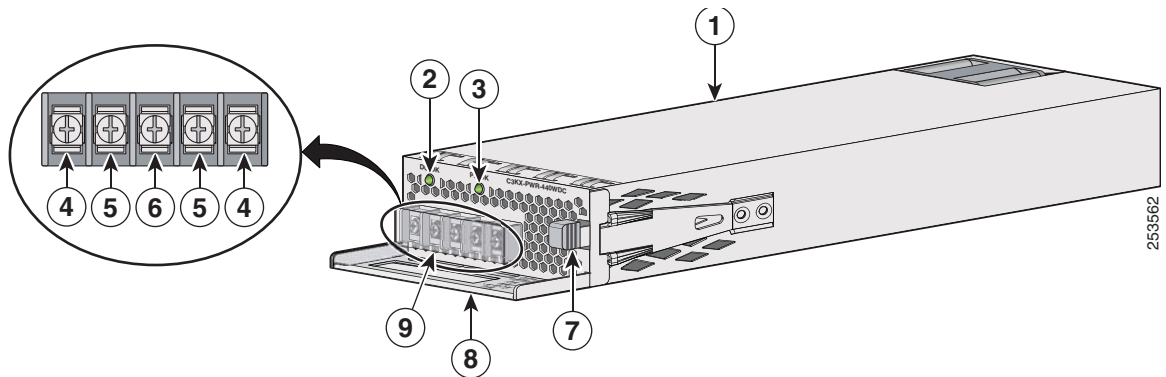
1	440-W DC power supply module	6	Grounding terminal
2	DC OK LED	7	Release latch
3	PS OK LED	8	Extraction handle
4	Input power terminals (positive polarity)	9	Terminal block safety cover
5	Input power terminals (negative polarity)		

If no power supply is installed in a power supply slot, install a power supply slot cover (Figure 3-5).

Figure 3-5   Power Supply Slot Cover
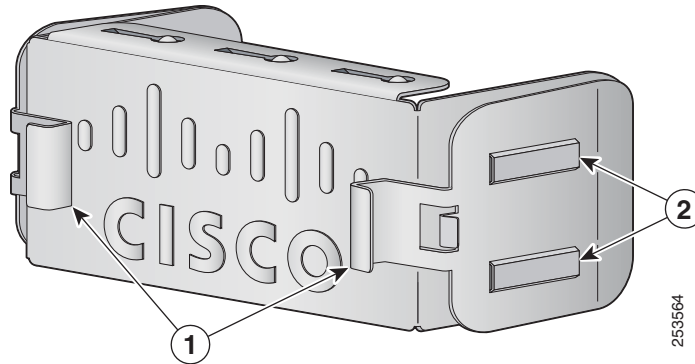
1	Release handles	**2**	Retainer clips

The power supply modules have two status LEDs.

Table 3-4   Switch Power Supply Module LEDs

AC Power Supply Module LEDs			
AC OK	**Description**	**PS OK**	**Description**
Off (AC LED is off)	No AC input power.	Off	Output is disabled, or input is outside operating range.
Green	AC input power present.	Green	Power output to switch.
		Red	Output has failed.
DC Power Supply Module LEDs			
DC OK	**Description**	**PS OK**	**Description**
Off (DC LED is off)	No DC input power.	Off	Output is disabled, or input is outside operating range.
Green	DC input power present.	Green	Power output to switch.
		Red	Output has failed.

Installation Guidelines

Table 1-16 lists the switches and the compatible power-supply modules. Observe these guidelines when removing or installing a power supply or fan module:

- Do not force the power supply or fan module into the slot. This can damage the pins on the switch if they are not aligned with the module.
- A power supply or fan module that is only partially connected to the switch can disrupt the system operation.
- Remove power from the power-supply module before removing or installing the module.

- You can remove and replace the power supply when the switch is connected to an XPS-2200 without interrupting normal switch operation. After a delay of about 3 seconds, the switch power supply automatically provides power, and the XPS-2200 is available to power other devices.

⚠ **Caution** Do not operate the switch with one power-supply module slot empty. For proper chassis cooling, both module slots must be populated, with either a power supply or a blank module.

⚠ **Warning** **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

- The switch supports hot swapping of a fan module. When replacing a fan, you should complete the replacement procedure within 5 minutes to avoid overheating the switch.

- The switch continues to operate when there is one failed chassis cooling fan. If one fan fails, the switch sends an error message. If a second fan fails, the switch sends an error message, writes a failure log to flash memory, and shuts down.

- Make sure that all power supply and fan modules are securely seated before moving the switch.

- When replacing the 1100-W or 715-W power supply, verify that you are using the correct power cord (CAB-16AWG-AC, only in North America).

⚠ **Warning** **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

⚠ **Warning** **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Statement 371—Power Cable and AC Adapter

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Installing an AC Power Supply

Step 1 Turn off the power at its source.

Step 2 Remove the power cord from the power cord retainer.

Step 3 Remove the power cord from the power connector.

Step 4 Press the release latch at the right side of the power supply module inward and slide the power supply out. (Figure 3-6).

⚠

Caution   Do not leave the power-supply slot open for more than 90 seconds while the switch is operating.

Step 5   Insert the new power supply into the power-supply slot, and gently push it into the slot (Figure 3-6). When correctly inserted, the 350-W and 715-W power supplies (excluding the power cord retainer) are flush with the switch rear panel. The 1100-W power-supply module extends 1.5 inches from the switch rear panel.

Figure 3-6   *Inserting the AC-Power Supply in the Switch*
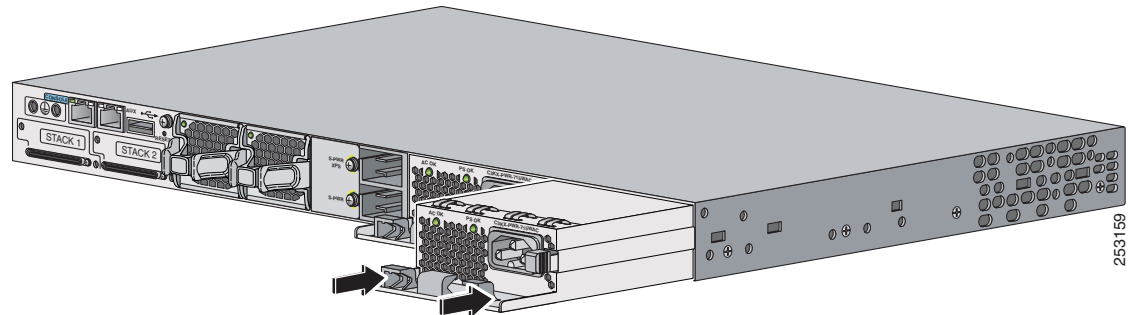
Step 6   (Optional) Make a loop in the power cord and thread it through the power cord retainer (Figure 3-7).

Figure 3-7   *AC-Power Supply with Power Cord Retainer*
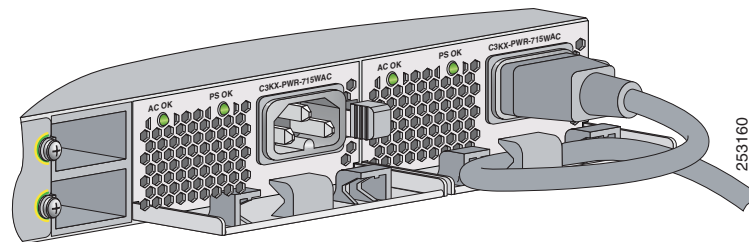
Step 7   Connect the power cord to the power supply and to an AC power outlet. Turn on the power at the power source.

Step 8   Confirm that the power supply *AC OK* and *PS OK* LEDs are green. See Table 1-18 for a description of the power supply module LEDs.

Installing a DC Power Supply

- Equipment That You Need, page 3-8
- Grounding the Switch, page 3-9
- Installing the DC Power Supply in the Switch, page 3-10
- Wiring the DC Input Power Source, page 3-11

Warning   **An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the terminal block plug.** Statement 122

Warning   **Before connecting or disconnecting ground or power wires to the chassis, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position. Use a voltmeter to test for 0 (zero) voltage at the power terminals on the chassis.** Statement 196

Warning   **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 20 A.** Statement 1005

Warning   **A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.** Statement 1022

Note   The grounding architecture of this product is DC-isolated (DC-I)

Equipment That You Need

- Ratcheting torque screwdriver with a number-2 Phillips head that exerts up to 15 pound-force inches (lbf-in.) of pressure.
- Panduit crimping tool with optional controlled-cycle mechanism (model CT-720, CT-920, CT-920CH, CT-930, or CT-940CH).
- Wire-stripping tools.
- 12-gauge copper ground wire (insulated or not) for the single-ground connection.
- 8-gauge copper ground wire (insulated or not) for the dual-ground connection.
- Ground lug screw and ring lug connector in the switch accessory kit. For a dual-ground connection, also use the dual-ground adaptor and dual lug connector from the DC power supply accessory kit.
- Four leads of 14-gauge copper wire.
- Four fork-type terminals from the DC power supply accessory kit. The terminals must be the proper size for M3 screws in a Dinkle DT-35-B25-style terminal block.

Grounding the Switch

Follow the grounding procedures at your site and observe these warnings:

Warning   **This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024

Warning   **When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046

Caution   Follow the grounding procedure instructions, and use a UL-listed lug (included in the accessory kit).

Follow these steps to install either a single-ground lug or a dual-ground lug on the switch. Make sure to follow any grounding requirements at your site.

Step 1   Use the ground lug screw and the lug ring for a single-ground connection. Use the dual-ground adaptor and dual-hole lug for a dual-ground connection.

Step 2   Strip the 12-gauge or 8-gauge ground wire to 0.5 inch (12.7 mm) ± 0.02 inch (0.5 mm) (Figure 3-8). Stripping more than the recommended amount of wire can leave exposed wire from the connector. Use 12-gauge copper ground wire for the single-ground connection. Use 8-gauge copper ground wire for the dual-ground connection.

Figure 3-8   Stripping the Ground Wire

0.5 in. (12.7 mm) ± 0.02 in. (0.5 mm)

Insulation

Wire lead

60528
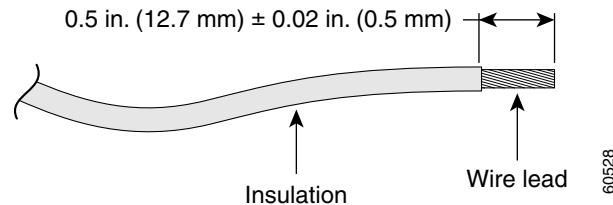
Step 3   Slide the open end of the ground lug over the exposed area of the wire.

Step 4   Using a Panduit crimping tool, crimp the ground lug to the wire (Figure 3-9).

Figure 3-9   Crimping the Ground Lug

200044
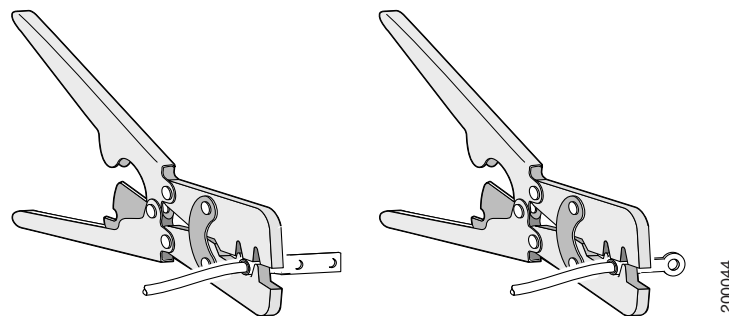
Step 5 Use the ground screw to attach the single-ground lug to the switch rear panel. Use two ground screws to attach the dual-hole lug to the switch rear panel (Figure 3-10).

Step 6 Using a ratcheting torque screwdriver, torque the ground-lug screws to 60 lbf-in. (960 ozf-in.).

Step 7 Connect the other end of the grounding wire to an appropriate grounding point at your site or to the rack.

Figure 3-10   *Attaching the Ground Lug and Wire Assembly*
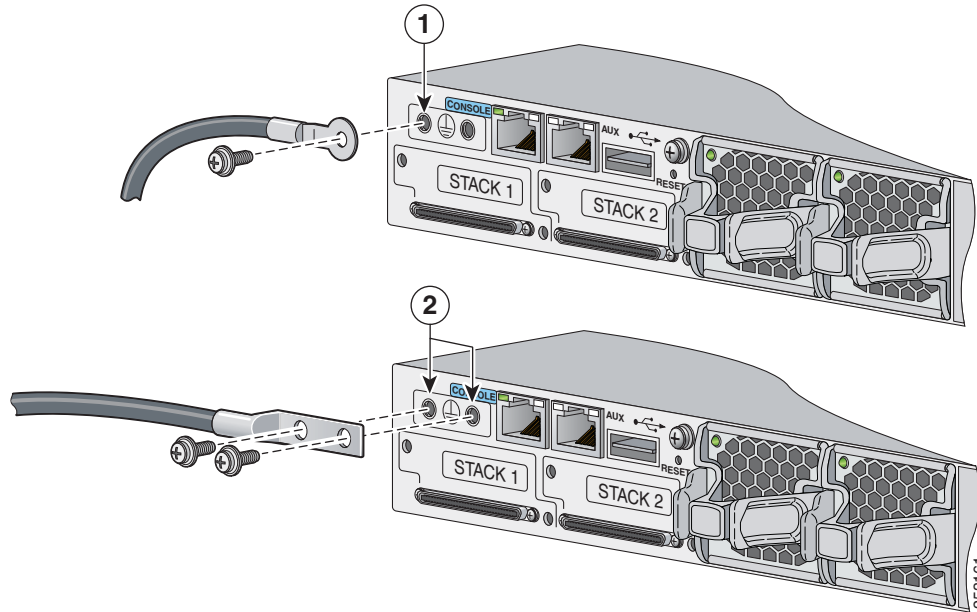
1	Single-ground screw and lug ring	**2**	Dual-ground adaptor and dual-hole lug

Installing the DC Power Supply in the Switch

See the Installation Guidelines, page 3-5.

Step 1 Turn off DC power. To ensure that power is off, change the circuit breakers to the OFF position, and tape the circuit-breaker switches in the OFF position.

Step 2 Remove the plastic safety cover from the power supply terminal blocks (Figure 3-4).
If you are not replacing a DC power supply, go to Step 5.

Step 3 Use a number-2 Phillips screwdriver to remove the DC-input power wires from the power terminals.

Step 4 Press the release latch at the right side of the power supply module inward, and pull the power supply out.

Step 5 Insert the power supply in the power-supply slot, and gently push it into the slot (Figure 3-11). When correctly installed, the DC power supply (excluding the extraction handle) is flush with the switch rear panel.

Figure 3-11   Inserting the DC Power Supply in the Switch

Step 6   Connect the input power as described in the "Wiring the DC Input Power Source" section.

Wiring the DC Input Power Source

Step 1   Using a wire-stripping tool, strip each of the four wires from the DC-input power source to the appropriate length for the terminals.

Warning   **Use copper conductors only.** Statement 1025

Step 2   Using a Panduit crimping tool, crimp the fork-type terminals to the copper conductor, 90C, 14-AWG DC power input wires.

Step 3   Connect the DC-input power terminals to the terminal blocks. See Figure 3-12 or Figure 3-13. Make sure to match the polarity (negative to negative, positive to positive) when connecting the wires to the terminal blocks. Connect the ground wire to a grounded metal rack or to earth ground if the switch is not in a grounded rack.

Figure 3-12   DC Source A Isolated From Source B with No Common Ground

Figure 3-13   *DC Source A and Source B Connections with Common Ground*
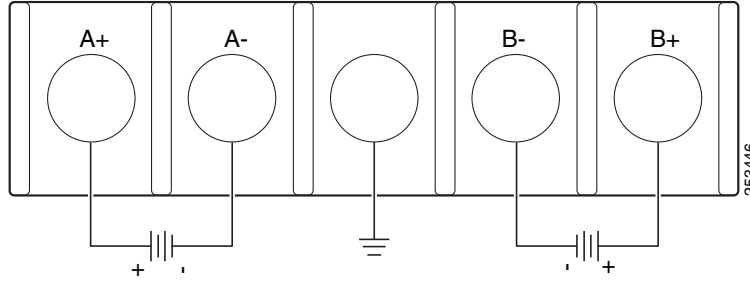
Step 4   Torque all terminal block screws to 11 lbf-in.

Step 5   Replace the terminal block safety cover.

Step 6   Move the DC power source circuit-breakers to the ON position.

Step 7   Confirm that the power-supply *DC OK* and *PS OK* LEDs are green. See Table 3-4 for a description of the module LEDs.

Finding the Power Supply Module Serial Number

If you contact Cisco Technical Assistance regarding a power supply module, you need to know the serial number. See Figure 3-14 to Figure 3-16 to find the serial number.

Figure 3-14   *1100-W AC Power Supply Serial Number*
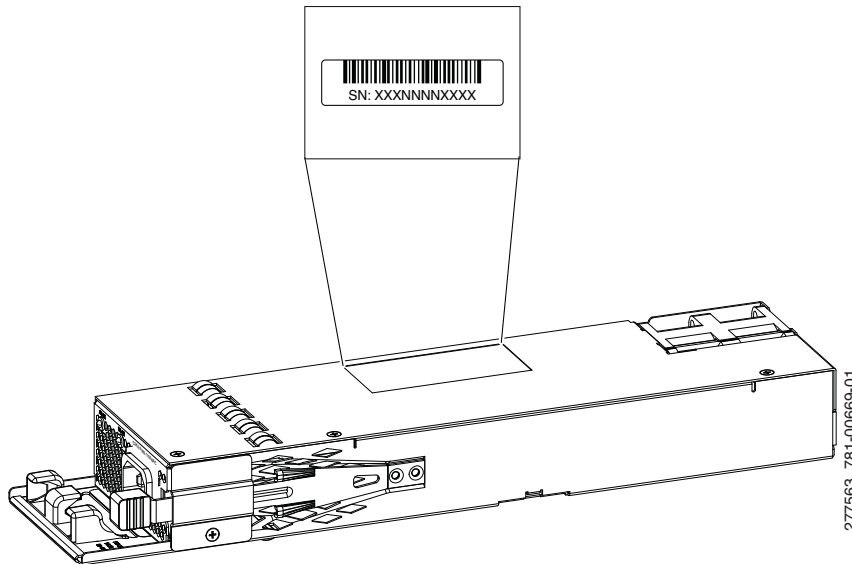
Figure 3-15   *715-W and 350-W AC Power Supply Module Serial Number*
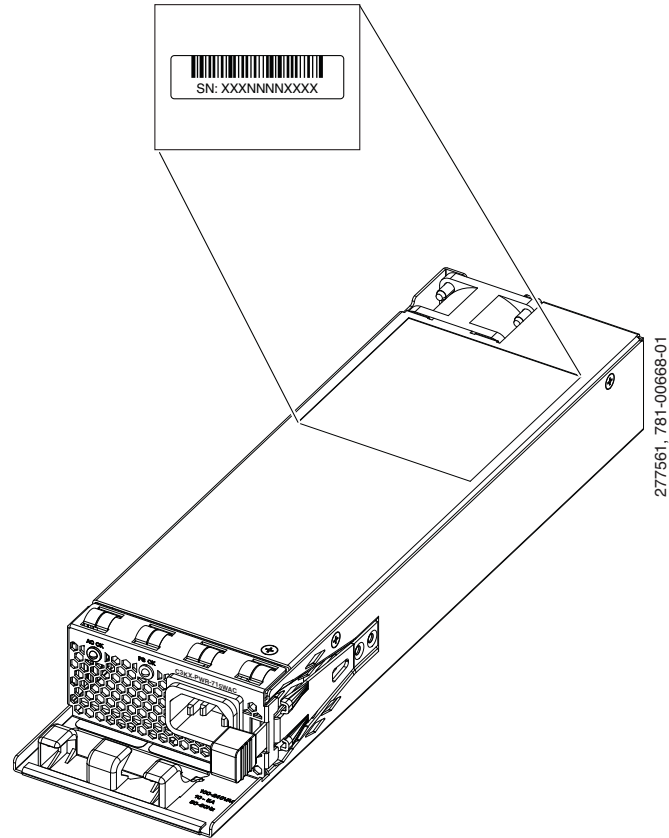
Figure 3-16   *440-W DC Power Supply Module Serial Number*
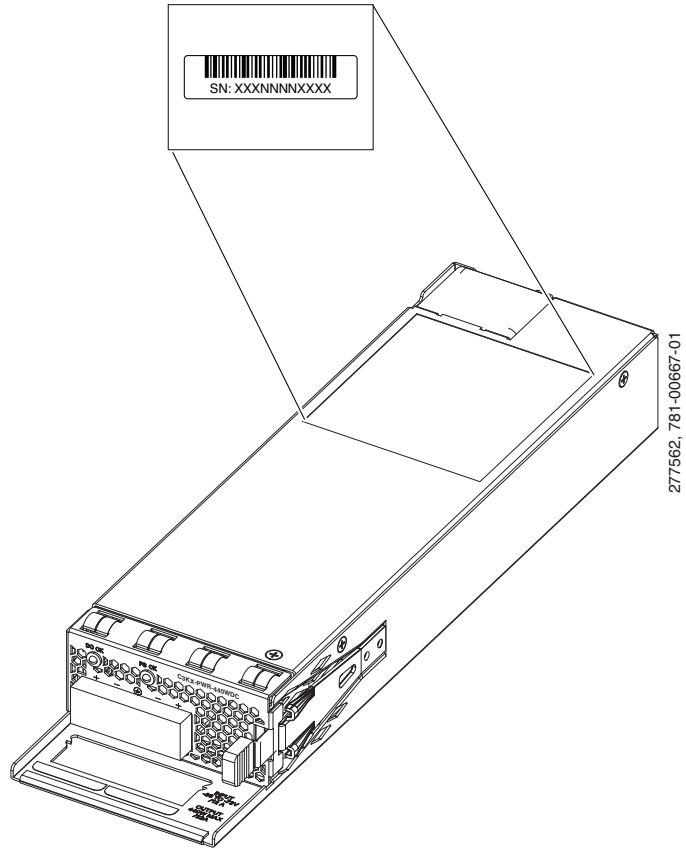
Fan Module Overview

The switch has two fan modules. Each fan module contains two fans. Fan modules are hot-swappable.

Figure 3-17   *Fan Module*
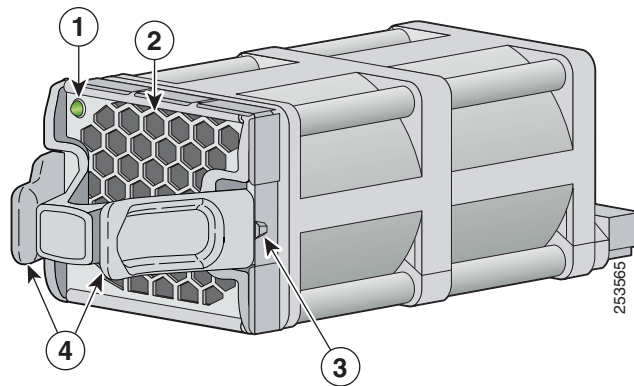
1	Fan LED	3	Retainer clip
2	Exhaust vent	4	Extraction handles

Installing a Fan Module

Note   There must be a fan module in both fan module slots.

Step 1   Pinch the fan release handle, and slide the fan out.

Caution   You should replace a failed fan module within 5 minutes to avoid overheating the switch.

Step 2   Insert the new fan module into the fan slot, and firmly push the module) into the slot, applying pressure to the end of the module, not the extraction handles (Figure 3-18). When correctly inserted, the fan module is flush with the switch rear panel. When the fan is operating, a green LED is on in the top left corner of the fan.

Warning   **Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.** Statement 206

Figure 3-18   Inserting the Fan Module in the Switch
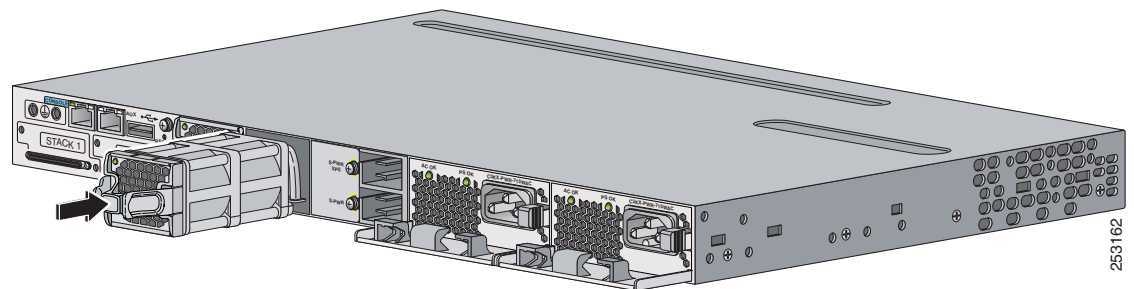
Finding the Fan Module Serial Number

If you contact Cisco Technical Assistance regarding a fan module, you need to know the fan module serial number. See Figure 3-19 for the serial number location.

Figure 3-19   Fan Module Serial Number

SN: XXXNNNNXXXX

277564, 781-00666-01
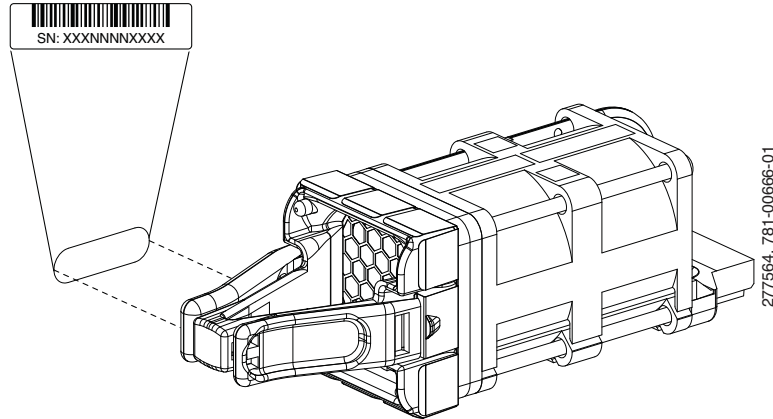
Troubleshooting

Diagnosing Problems

The switch LEDs provide troubleshooting information about the switch. They show POST failures, port-connectivity problems, and overall switch performance. You can also get statistics from the device manager, the CLI, or an SNMP workstation. See the software configuration guide, the switch command reference guide on Cisco.com, or the documentation that came with your SNMP application for details.

Switch POST Results

As the switch powers on, it begins the power-on self-test (POST), a series of tests that runs automatically to ensure that the switch functions properly. It might take several minutes for the switch to complete POST.

When the switch begins POST, the Status LED turns green. The System LED blinks green, and the other LEDs stay green.

When POST completes successfully, the System LED remains green. The XPS LED is green for some time and then returns to its operating status. The other LEDs turn off and return to their operating status. If the switch fails POST, the System and Ethernet management port LEDs turn amber.

Note POST failures are usually fatal. Contact your Cisco technical support representative if your switch does not pass POST.

Switch LEDs

Look at the port LEDs for information when troubleshooting the switch. See the "LEDs" section on page 1-8 for descriptions of the LED colors and their meanings.

Switch Connections

Bad or Damaged Cable

Always examine the cable for marginal damage or failure. A cable might be just good enough to connect at the physical layer, but it could corrupt packets as a result of subtle damage to the wiring or connectors. You can identify this situation because the port has many packet errors or the port constantly flaps (loses and regains link).

- Exchange the copper or fiber-optic cable with a known good cable.

- Look for broken or missing pins on cable connectors.

- Rule out any bad patch panel connections or media convertors between the source and destination. If possible, bypass the patch panel or eliminate media convertors (fiber-optic-to-copper).

- Try the cable in another port to see if the problem follows the cable.

- Catalyst 3750-X switch StackWise cable: remove and inspect the cable and StackWise port for bent pins or damaged connectors. If the StackWise cable is bad, replace it with a known good cable.

Ethernet and Fiber Cables

Make sure that you have the correct cable:

- For Ethernet, use Category 3 copper cable for 10 Mbps UTP connections. Use either Category 5, Category 5e, or Category 6 UTP for 10/100 or 10/100/1000 Mbps connections.

- Verify that you have the correct fiber-optic cable for the distance and port type. Make sure that the connected device ports match and use the same type encoding, optical frequency, and fiber type. For more information about cabling, see the "SFP and SFP+ Module Cable Specifications" section on page B-5.

- Determine if a copper crossover cable was used when a straight-through was required, or the reverse. Enable auto-MDIX on the switch, or replace the cable. See Table 2-3 for recommended Ethernet cables.

Link Status

Verify that both sides have link. A broken wire or a shut down port can cause one side to show link even though the other side does not have link.

A port LED that is on does not guarantee that the cable is functional. It might have encountered physical stress, causing it to function at a marginal level. If the port LED does not turn on:

- Connect the cable from the switch to a known good device.

- Make sure that both ends of the cable are connected to the correct ports.

- Verify that both devices have power.

- Verify that you are using the correct cable type. See Appendix B, "Connector and Cable Specifications" for more information.

- Look for loose connections. Sometimes a cable appears to be seated but is not. Disconnect the cable and then reconnect it.

10/100/1000 Port Connections

A port appears to malfunction:

- Verify the status of all ports. See Table 1-8 on page 1-10 for descriptions of the LEDs and their meanings.

- Use the **show interfaces** privileged EXEC command to see if the port is error-disabled, disabled, or shut down. Re-enable the port if necessary.

- Verify the cable type. See Appendix B, "Connector and Cable Specifications."

PoE Port Connections

A powered device connected to a PoE port does not receive power:

- Verify the status of all ports. See Table 1-9 and Table 1-13 for descriptions of the LEDs and their meanings.

- Use the **show interfaces** privileged EXEC command to see if the port is error-disabled, disabled, or shut down. Re-enable the port if necessary.

- Verify that the power supply installed in the switch meets the power requirements of your connected devices. See the "Power Supply Modules" section on page 1-17 for more information.

- Verify the cable type. Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af might not support PoE when connected to the switch by a crossover cable. Replace the crossover cable with a straight-through cable.

⚠️

Caution   Noncompliant cabling or powered devices can cause a PoE port fault. Use only compliant cabling to connect Cisco prestandard IP phones, wireless access points, or IEEE 802.3af-compliant devices.

✎

Note   The output of the PoE circuit has been evaluated as a limited power source (LPS) per IEC 60950.

SFP Modules

Use only Cisco network modules and SFP modules.

- Inspect the network module and SFP module. Exchange the suspect module with a known good module.

- Verify that the module is supported on this platform. (The switch release notes on Cisco.com list the SFP and SFP+ modules that the switch supports.)

- Use the **show interfaces** privileged EXEC command to see if the port or module is error-disabled, disabled, or shut down. Re-enable the port if needed.

- Make sure that all fiber connections are clean and securely connected.

- For CX1 module connections, make sure that cable routing does not violate the minimum allowed cable bend radius. See the module documentation for specific cabling requirements.

> ✎
>
> **Note**   When ordering or using CX1 cables, ensure that the version identifier is 2 or higher.

- For long wave SFP+ modules, a mode conditioning patch might improve performance over maximum link distances with MMF connections.

Interface Settings

Verify that the port or interface is not disabled or powered off. If a port or interface is manually shut down on either side of the link, it does not come up until you re-enable the interface. Use the **show interfaces** privileged EXEC command to see if the interface is error-disabled, disabled, or shut down on either side of the connection. If needed, re-enable the interface.

Ping End Device

Ping from the directly connected switch first, and then work your way back port by port, interface by interface, trunk by trunk, until you find the source of the connectivity issue. Make sure that each switch can identify the end device MAC address in its Content-Addressable Memory (CAM) table.

Spanning Tree Loops

STP loops can cause serious performance issues that look like port or interface problems.

A unidirectional link can cause loops. It occurs when the traffic sent by the switch is received by the neighbor, but the traffic from the neighbor is not received by the switch. A broken cable, other cabling problems, or a port issue could cause this one-way communication.

You can enable UniDirectional Link Detection (UDLD) on the switch to help identify unidirectional link problems. For information about enabling UDLD on the switch, see the "Understanding UDLD" section in the software configuration guide on Cisco.com.

Switch Performance

Speed, Duplex, and Autonegotiation

Port statistics that show a large amount of alignment errors, frame check sequence (FCS), or late-collisions errors, might mean a speed or duplex mismatch.

A common issue occurs when duplex and speed settings are mismatched between two switches, between a switch and a router, or between the switch and a workstation or server. Mismatches can happen when manually setting the speed and duplex or from autonegotiation issues between the two devices.

To maximize switch performance and to ensure a link, follow one of these guidelines when changing the duplex or the speed settings:

- Let both ports autonegotiate both speed and duplex.
- Manually set the speed and duplex parameters for the interfaces on both ends of the connection.
- If a remote device does not autonegotiate, use the same duplex settings on the two ports. The speed parameter adjusts itself even if the connected port does not autonegotiate.

Autonegotiation and Network Interface Cards

Problems sometimes occur between the switch and third-party network interface cards (NICs). By default, the switch ports and interfaces autonegotiate. Laptops or other devices are commonly set to autonegotiate, yet sometimes issues occur.

To troubleshoot autonegotiation problems, try manually setting both sides of the connection. If this does not solve the problem, there could be a problem with the firmware or software on the NIC. You can resolve this by upgrading the NIC driver to the latest version.

Cabling Distance

If the port statistics show excessive FCS, late-collision, or alignment errors, verify that the cable distance from the switch to the connected device meets the recommended guidelines. See the "Cable and Adapter Specifications" section on page B-5.

Resetting the Switch to the Factory Default Settings

If you have configured a new switch with a wrong IP address, or if all of the switch LEDs start blinking when you try to enter Express Setup mode, you can clear the IP address that is configured on the switch.

Note   Resetting the switch deletes the configuration and reboots the switch.

To reset the switch:

1. Press and hold the Mode button (Figure 1-1 on page 1-3).

   The switch LEDs begin blinking after about 2 seconds. If the LEDs above the mode button turn solid green, you can release the Mode button and run Express Setup to configure the switch. If the LEDs do not turn solid green, continue with the next step.

2. Continue holding down the Mode button. The LEDs stop blinking after an additional 8 seconds, and then the switch reboots.

The switch now behaves like an unconfigured switch. You can configure the switch by using Express Setup as described in the switch getting started guide on Cisco.com.

You can also configure the switch by using the CLI setup procedure. See Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

Finding the Switch Serial Number

If you contact Cisco Technical Assistance, you need to know the switch serial number. Figure 4-1 shows the serial number location. You can also use the **show version** privileged EXEC command to see the switch serial number.

Figure 4-1   *Switch Serial Number Location*
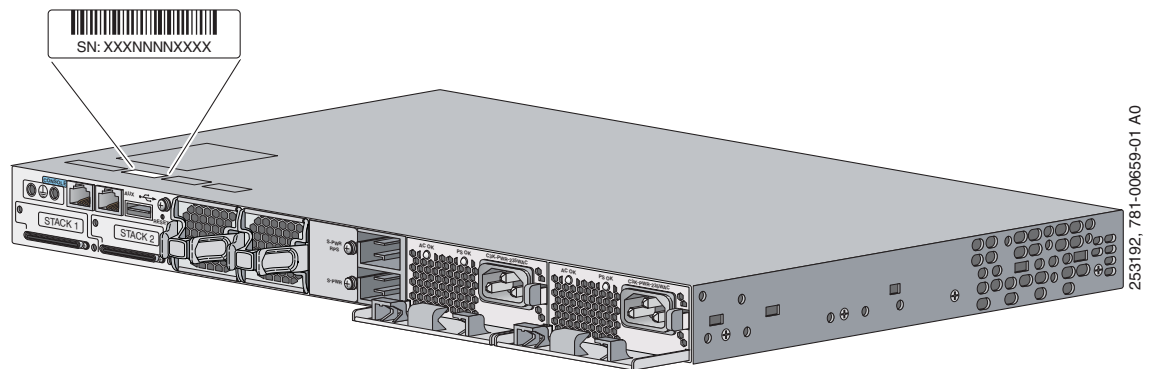
Replacing a Failed Data Stack Member (Catalyst 3750-X Switches)

To replace a failed data stack member:

1. The replacement switch must be a Catalyst 3750-X switch.

2. Power down the failed switch. Remove AC or DC input power, and if the switch is part of a StackPower stack, remove the StackPower cables.

3. Make sure the replacement switch is powered off, and then connect it to the stack.

    If you had manually set the member numbers for the switch stack, manually assign the member number of the failed switch to the replacement switch. To manually assign the stack member number, see the switch software configuration guide on Cisco.com.

4. Make the same Gigabit Ethernet connections on the replacement switch that were on the failed switch.

5. Reinstall any modules and cable connections.

6. Power on the replacement switch.

The replacement switch will have the same configuration for all the interfaces as the failed switch and will function the same as the failed switch.

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A P P E N D I X   A

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Technical Specifications

- Switch Specifications, page A-1

- Power Supply Module Specifications, page A-2

- Fan Module Specifications, page A-4

Switch Specifications

Table A-1   Environmental and Physical Specifications

Environmental Ranges	
Operating temperature	32 to 113° F (0 to 45° C)
Storage temperature	–13 to 158° F (–25 to 70° C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m), NEBS up to 13,000 ft (4000 m)
Physical Specifications	

Table A-1   Environmental and Physical Specifications (continued)

Weight	
Catalyst 3750-X-24T	15.6 lb (7.1 kg)[1]
Catalyst 3750-X-24P	15.8 lb (7.2 kg)[2]
Catalyst 3750-X-48T	16.3 lb (7.4 kg)[1]
Catalyst 3750-X-48P	16.5 lb (7.5 kg)[2]
Catalyst 3750-X-48PF	16.7 lb (7.6 kg)[3]
Catalyst 3560-X-24T	15.4 lb (7.0 kg)[1]
Catalyst 3560-X-24P	15.7 lb (7.1 kg)[2]
Catalyst 3560-X-48T	16.1 lb (7.3 kg)[1]
Catalyst 3560-X-48P	16.4 lb (7.4 kg)[2]
Catalyst 3560-X-48PF	16.6 lb (7.5 kg)[3]
Dimensions (H x W x D)	
Catalyst 3750-X and 3560-X-24T	1.75 x 17.5 x 18.0 in. (4.45 x 44.5 x 46.0 cm)
Catalyst 3750-X and 3560-X-24P	1.75 x 17.5 x 18.0 in. (4.45 x 44.5 x 46.0 cm)
Catalyst 3750-X and 3560-X-48T	1.75 x 17.5 x 18.0 in. (4.45 x 44.5 x 46.0 cm)
Catalyst 3750-X and 3560-X-48P	1.75 x 17.5 x 18.0 in. (4.45 x 44.5 x 46.0 cm)
Catalyst 3750-X and 3560-X-48PF	1.75 x 17.5 x 19.5 in. (4.45 x 44.5 x 49.5 cm)
	Note The C3KX-PWR-1100 W AC power supply extends 1.5 in. (3.8 cm) beyond the switch chassis.

1. With C3KX-PWR-350-W AC power supply

2. With C3KX-PWR-715-W AC power supply

3. With C3KX-PWR-1100-W AC power supply

Power Supply Module Specifications

Table A-2   Environmental and Physical Specifications for the AC- and DC-Power Supply Modules

Environmental Ranges	
Operating temperature	23 to 113° F (–5 to 45° C)
Storage temperature	–40 to 158° F (–40 to 70° C)
Relative humidity	10 to 95% (noncondensing)
Altitude	Up to 10,000 ft (3049 m)
Physical Specifications	

Table A-2   Environmental and Physical Specifications for the AC- and DC-Power Supply Modules (continued)

Weight	
C3KX-PWR-1100WAC	3 lb (1.4 kg)
C3KX-PWR-715WAC	2.8 lb (1.3 kg)
C3KX-PWR-350WAC	2.7 lb (1.2 kg)
C3KX-PWR-440WDC	3.5 lb (1.6 kg)
Dimensions (H x D x W)	
C3KX-PWR-1100WAC	1.38 x 11.72 x 3.25 in. (3.5 x 29.8 x 8.3 cm)
C3KX-PWR-715WAC	1.38 x 10.22 x 3.25 in. (3.5 x 26 x 8.3 cm)
C3KX-PWR-350WAC	1.38 x 10.22 x 3.25 in. (3.5 x 26 x 8.3 cm)
C3KX-PWR-440WDC	1.38 x 10.22 x 3.25 in. (3.5 x 26 x 8.3 cm)
	Note Dimensions shown exclude the attached power cord retainer (AC power supplies) or the extraction handle (DC power supplies), which measures 1.55 in. (3.9 cm).

Table A-3   Power Specifications for AC Power 24- and 48-Port Switches

Power Specifications	
Maximum output power	C3KX-PWR-1100WAC: 1100 W C3KX-PWR-715WAC: 715 W C3KX-PWR-350WAC: 350 W
Input voltage range and frequency	C3KX-PWR-1100WAC: 1100-W, 115 to 240 VAC (autoranging) 50 to 60 Hz C3KX-PWR-715WAC: 715 W, C3KX-PWR-350WAC: 350 W, 100 to 240 VAC (autoranging), 50 to 60 Hz
Input current	C3KX-PWR-1100WAC:12–6 A C3KX-PWR-715WAC: 10–5 A C3KX-PWR-350WAC: 4–2 A
Output ratings	C3KX-PWR-1100WAC: –56 V@19.64 A C3KX-PWR-715WAC: –56 V@12.8 A C3KX-PWR-350WAC: –56 V@6.25 A
Total input BTU[1]	C3KX-PWR-1100WAC: 4263 Btus per hour, 1250 W C3KX-PWR-715WAC: 2742 Btus per hour, 804 W C3KX-PWR-350WAC: 1357 Btus per hour, 398 W
Total output BTU[1]	C3KX-PWR-1100WAC: 3751 Btus per hour, 1100 W C3KX-PWR-715WAC: 2438 Btus per hour, 765 W C3KX-PWR-350WAC: 1194 Btus per hour, 350 W

1. The total input and total output BTU ratings refer to input power to the power supply and output power to the switch. The BTU ratings are based on 100 VAC for the 350-W and 715-W power supplies and 115 VAC for the 1100-W power supply.

Table A-4   Power Specifications for DC-Power 24- and 48-Port Switches

Power Specifications	
Maximum output power	C3KX-PWR-440WDC: 440 W
Input current	C3KX-PWR-440WDC: 16 – 8 A
DC input voltage	C3KX-PWR-440WDC: –36 to –72 VDC
Output ratings	C3KX-PWR-440WDC: –56 V @7.86 A
Voltage range domestic	C3KX-PWR-440WDC: –36 VDC (minimum) –48 VDC (nominal), –72 VDC (maximum)
Voltage range international	C3KX-PWR-440WDC: –36 VDC (minimum) –60 VDC (nominal), –72 VDC (maximum)
Total input BTU[1]	C3KX-PWR-440WDC: 1841 Btus per hour, 540 W
Total output BTU[1]	C3KX-PWR-440WDC: 1502 Btus per hour, 440 W
Wire gauge for ground connection	C3KX-PWR-440WDC: 12 AWG or 8 AWG
Branch circuit protection	C3KX-PWR-440WDC: 20 A

1. The total input and total output BTU ratings refer to input power to the power supply and output power to the switch. The BTU ratings are based on –36 VDC.

Fan Module Specifications

Table A-5   Fan Module Environmental and Physical Specifications

Environmental Ranges	
Operating temperature	23 to 113° F (–5 to 45° C)
Storage temperature	–40 to 158° F (–40 to 70° C)
Relative humidity	10 to 95% (noncondensing)
Altitude	Up to 10,000 ft (3049 m)
Physical Specification	
Dimensions (H x D x W)	1.68 x 6.8 x 5.74 in. (4.27 x 17.27 x 14.58 cm)
Weight	0.24 lb. (0.1 kg)
Operating Specification	
Airflow	60 cfm

Table A-6   Standards and Certifications

Description	Specification
Electromagnetic compatibility certifications	FCC Part 15 Class A EN55022 Class A (CISPR22) EN55024 (CISPR24) CE VCCI Class A AS/NZS CISPR22 Class A MIC China EMC certifications GOST
Environmental	Reduction of Hazardous Substances (ROHS) 5
Noise specifications	Office product spec: 48 dBA at 86º F (30º C)
Telco	CLEI code

Connector and Cable Specifications

- "Connector Specifications" section on page B-1l
- "Cable and Adapter Specifications" section on page B-5
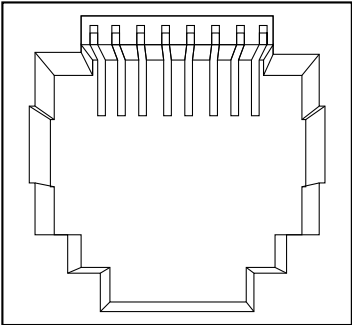
Connector Specifications

- 10/100/1000 Ports, page B-1
- 10 Gigabit Ethernet CX1 (SFP+ Copper) Connectors, page B-2
- SFP and SFP+ Modules, page B-2
- 10/100 Ethernet Management Port, page B-3
- Console Port, page B-4

10/100/1000 Ports

The 10/100/1000 Ethernet ports on switches use RJ-45 connectors and Ethernet pinouts.

Figure B-1　*10/100/1000 Port Pinouts*

Pin	Label
1	TP0+
2	TP0-
3	TP1+
4	TP2+
5	TP2-
6	TP1-
7	TP3+
8	TP3-

10 Gigabit Ethernet CX1 (SFP+ Copper) Connectors

The 10-Gigabit Ethernet electrical modules use CX1 copper connectors similar to the one shown in Figure B-2.

✎

Note   When ordering or using CX1 cables, ensure that the version identifier is 2 or higher.

The 10-Gigabit Ethernet optical modules use the connectors shown in Figure B-3 and Figure B-4.

Figure B-2   10-Gigabit Ethernet CX1 Copper Connector (example)
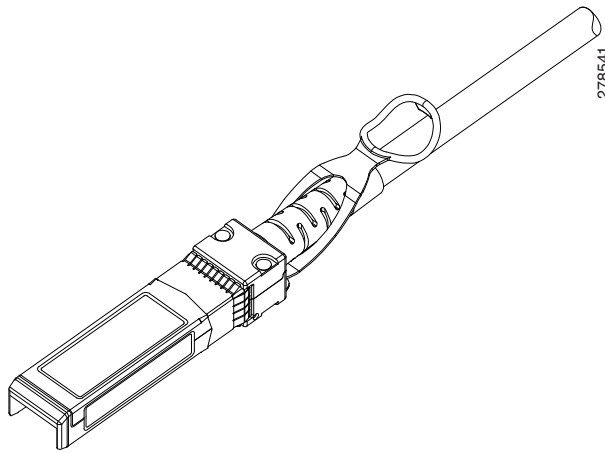
SFP and SFP+ Modules

Figure B-3, Figure B-4, and Figure B-5 show the SFP module connectors.

The Catalyst 3560-X switch supports the SFP module patch cable, a 0.5-meter, copper, passive cable with SFP module connectors at each end (Figure B-6). This cable can be used (only with 1-Gigabit Ethernet SFP ports) to connect two Catalyst 3560-X switches in a cascaded configuration.

Figure B-3   Duplex LC Cable Connector
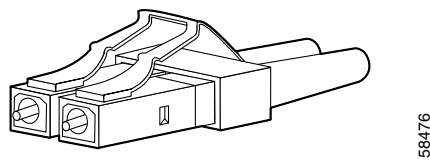
Figure B-4   *Simplex LC Cable Connector*
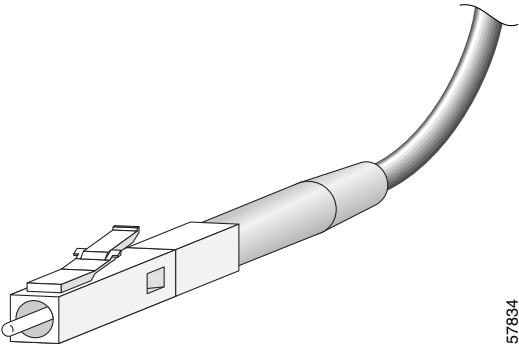
Figure B-5   *Copper SFP Module RJ-45 Connector*
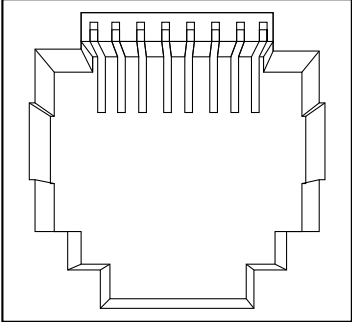
Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	
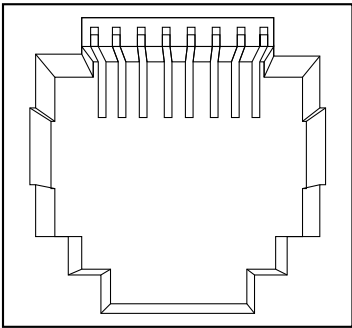
Figure B-6   *SFP Module Patch Cable (Catalyst 3560-X Switches)*
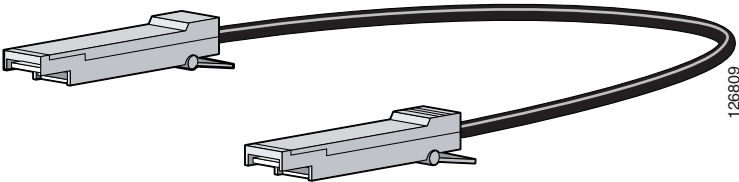
10/100 Ethernet Management Port

The 10/100 Ethernet management port uses RJ-45 connectors with Ethernet pinouts. Figure B-7 shows the pinouts.

Figure B-7 **10/100 Port Pinouts**

Pin	Label	1 2 3 4 5 6 7 8
1	RD+	
2	RD-	
3	TD+	
4	NC	
5	NC	
6	TD-	
7	NC	
8	NC	

Console Port

The switch has two console ports: a USB 5-pin mini-Type B port on the front panel (see Figure B-8) and an RJ-45 console port on the rear panel.

Figure B-8 **USB Mini-Type B Port**
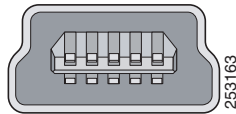
The USB console port uses a USB Type A to 5-pin mini-Type B cable, shown in Figure B-9. The USB Type A-to-USB mini-Type B cable is not supplied. You can order an accessory kit (part number 800-33434) that contains this cable.

Figure B-9 **USB Type A-to-USB 5-Pin Mini-Type B Cable**
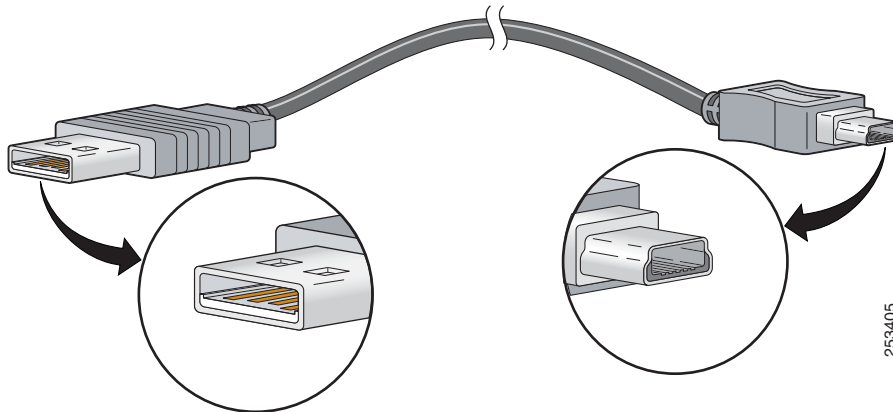
The RJ-45 console port uses an 8-pin RJ-45 connector (See Table B-2 and Table B-3.) The supplied RJ-45-to-DB-9 adapter cable is used to connect the console port of the switch to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order a kit (part number ACS-DSBUASYN=) containing that adapter. For console port and adapter pinout information, see Table B-2 and Table B-3.

Cable and Adapter Specifications

SFP and SFP+ Module Cable Specifications

Each port must match the wave-length specifications on each end of the cable, and the cable must not exceed the stipulated cable length. Copper 1000BASE-T SFP module transceivers use standard four twisted-pair, Category 5 cable at lengths up to 328 feet (100 meters).

Table B-1   Fiber-Optic SFP and SFP+ Module Port Cabling Specifications

SFP Module	Wavelength (nanometers)	Cable Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)[1]	Cable Distance
100BASE-BX (GLC-FE-100BX-D GLC-FE-100BX-U)	1310 TX 1550 RX	SMF	G.652[2]	—	32,810 feet (10 km)
100BASE-FX (GLC-GE-100FX)	1310	MMF	50/125 62.5/125	500 500	6,562 feet (2 km) 6,562 feet (2 km)
100BASE-FX (GLC-FE-100FX)	1310	MMF	50/125 62.5/125	500 500	6,562 feet (2 km) 6,562 feet (2 km)
100BASE-LX (GLC-FE-100LX)	1310	SMF	G.652[2]	—	32,810 feet (10 km)
1000BASE-BX10-D (GLC-BX-D)	1490 TX 1310 RX	SMF	G.652[2]	—	32,810 feet (10 km)
1000BASE-BX10-U (GLC-BX-U)	1310 TX 1490 RX	SMF	G.652[2]	—	32,810 feet (10 km)
1000BASE-SX (GLC-SX-MM)	850	MMF	62.5/125 62.5/125 50/125 50/125	160 200 400 500	722 feet (220 m) 902 feet (275 m) 1,640 feet (500 m) 1,804 feet (550 m)

Table B-1   Fiber-Optic SFP and SFP+ Module Port Cabling Specifications (continued)

SFP Module	Wavelength (nanometers)	Cable Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)[1]	Cable Distance
1000BASE-T (GLC-T)	Standard 4 twisted-pair Category 5 cable	—	—	—	328 feet (100 m)
1000BASE-LX/LH (GLC-LH-SM)	1310	MMF[3] SMF	62.5/125 50/125 50/125 G.652[2]	500 400 500 —	1,804 feet (550 m) 1,804 feet (550 m) 1,804 feet (550 m) 32,810 feet (10 km)
1000BASE-ZX (GLC-ZX-SM)	1550	SMF	G.652[2]	—	43.4 to 62 miles (70 to 100 km)[4]
CWDM	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	SMF	G.652[2]	—	62 miles (100 km)
10GBASE-LR (SFP-10G-LR)	1310	SMF	G.652[2]		6.21 miles (10 km)
10GBASE-SR (SFP-10G-SR)	850	MMF	62.5/125 62.5/125 50/125 50/125 50/125	160 200 400 500 2000	85 feet (26 m) 108 feet (33 m) 216 feet (66 m) 269 feet (82 m) 6,561 feet (2000 m)
10GBASE-CX1 (SFP-H10GB-CU1M) (SFP-H10GB-CU3M) (SFP-H10GB-CU5M)	—	Twinax cable, 30-AWG cable assembly Twinax cable, 30-AWG cable assembly Twinax cable, 24-AWG cable assembly	—	—	3 feet (1 m) 9 feet (3 m) 16 feet (5 m)

1. Modal bandwidth applies only to multimode fiber.

2. A mode-field diameter/cladding diameter = 9 micrometers/125 micrometers.

3. A mode-conditioning patch cord is required. Using an ordinary patch cord with MMF or 1000BASE-LX/LH SFP modules and a short link distance can cause transceiver saturation and an elevated bit error rate (BER). When using the LX/LH SFP module with 62.5-micron diameter MMF, you must also install a mode-conditioning patch cord between the SFP module and the MMF cable on both the sending and receiving ends of the link. The mode-conditioning patch cord is required for link distances greater than 984 feet (300 m).

4. 1000BASE-ZX SFP modules can send data up to 62 miles (100 km) by using dispersion-shifted SMF or low-attenuation SMF; the distance depends on the fiber quality, the number of splices, and the connectors.

Four Twisted-Pair Cable Pinouts

Figure B-10   Four Twisted-Pair Straight-Through Cable Schematic

Switch   Router or PC

1   TPO+   ◄————————►   1   TP1+
2   TPO-   ◄————————►   2   TP1-
3   TP1+   ◄————————►   3   TPO+
6   TP1-   ◄————————►   6   TPO-

4   TP2+   ◄————————►   4   TP3+
5   TP2-   ◄————————►   5   TP3-
7   TP3+   ◄————————►   7   TP2+
8   TP3-   ◄————————►   8   TP2-

65272
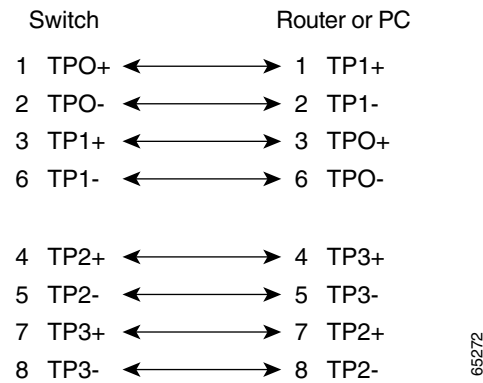
Figure B-11   Four Twisted-Pair Crossover Cable Schematic

Switch   Switch

1   TP0+   ◄————————►   1   TP0+
2   TP0-   ◄————————►   2   TP0-
3   TP1+   ◄————————►   3   TP1+
6   TP1-   ◄————————►   6   TP1-

4   TP2+   ◄————————►   4   TP2+
5   TP2-   ◄————————►   5   TP2-
7   TP3+   ◄————————►   7   TP3+
8   TP3-   ◄————————►   8   TP3-

65274
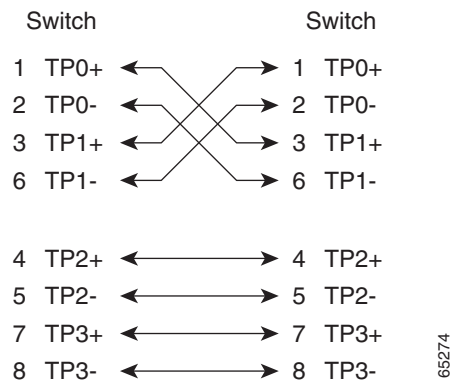
Two Twisted-Pair Cable Pinouts

Figure B-12   Two Twisted-Pair Straight-Through Cable Schematic

Switch   Router or PC

3 TD+   ————————►   3 RD+
6 TD–   ————————►   6 RD–

1 RD+   ◄————————   1 TD+
2 RD–   ◄————————   2 TD–

H5578
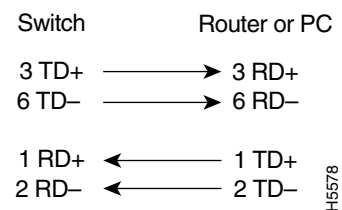
Figure B-13   Two Twisted-Pair Crossover Cable Schematic
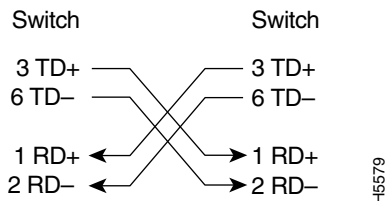
Identifying a Crossover Cable

To identify a crossover cable, hold the cable ends side-by-side, with the tab at the back. The wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug. (See Figure B-14.)

Figure B-14   Identifying a Crossover Cable
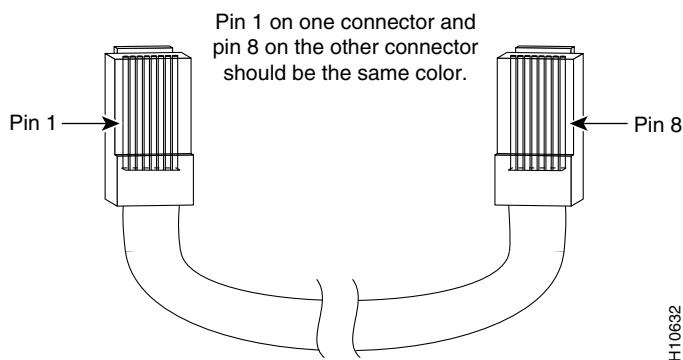
Console Port Adapter Pinouts

The console port uses an 8-pin RJ-45 connector, which is described in Table B-2 and Table B-3. If you did not order a console cable, you need to provide an RJ-45-to-DB-9 adapter cable to connect the switch console port to a PC console port. You need to provide an RF-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order a kit with an adapter (part number ACS-DSBUASYN=). For console port and adapter pinout information, see Table B-2 and Table B-3.

Table B-2 lists the pinouts for the console port, the RF-45-to-DB-9 adapter cable, and the console device.

Table B-2   Console Port Signaling Using a DB-9 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	DB-9 Pin	Signal
RTS	8	CTS
DTR	6	DSR
TxD	2	RxD

Table B-2   Console Port Signaling Using a DB-9 Adapter (continued)

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	DB-9 Pin	Signal
GND	5	GND
GND	5	GND
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

Table B-3 lists the pinouts for the console port, RJ-45-to-DB-25 female DTE adapter, and the console device.

Note   The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order a kit with the adapter (part number ACS-DSBUASYN=) from Cisco.

Table B-3   Console Port Signaling Using a DB-25 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	DB-25 Pin	Signal
RTS	5	CTS
DTR	6	DSR
TxD	3	RxD
GND	7	GND
GND	7	GND
RxD	2	TxD
DSR	20	DTR
CTS	4	RTS

■ **Cable and Adapter Specifications**

Configuring the Switch with the CLI-Based Setup Program

This appendix provides a CLI-based setup procedure for a Catalyst 3750-X and 3560-X standalone switch or a switch stack. To set up the switch by using Express Setup, see the *Cisco 3750-X and 3560-X Switch Getting Started Guide*. Before connecting the switch to a power source, review the safety warnings in Chapter 2, "Switch Installation."

Accessing the CLI

Accessing the CLI Through Express Setup

You can access the CLI on an unconfigured switch by placing the switch in Express Setup mode and then connecting a switch Ethernet port or the Ethernet management port to the Ethernet port of your PC or workstation. To put the switch into Express Setup mode, follow the steps described in the getting started guide for powering on the switch and using Express Setup.

When the switch is in Express Setup mode, open a Telnet session to the switch by entering the IP address *10.0.0.1*. Enter the **setup** user EXEC command. Enter the information described in the "Entering the Initial Configuration Information" section on page C-6.

After you have entered the configuration information for the switch, save it to flash memory by using the **write memory** privileged EXEC command.

> **Note** While in Express Setup mode, the IP address 10.0.0.1 remains active on the switch until you enter the **write memory** command. You lose the Telnet connection after entering the **write memory** command.

For more information about using the CLI, see the command reference for this release.

Accessing the CLI Through a Console Port

You can enter Cisco IOS commands and parameters through the CLI.

> ![note icon]
>
> **Note** If you have stacked Catalyst 3750-X switches, connect to the 10/100 Ethernet management port or console port of one of the stack switches. You can perform the initial configuration for the entire stack on any switch in the stack.

Use one of these options to access the CLI:

- RJ-45 Console Port
- USB Console Port

RJ-45 Console Port

The RJ-45 console port is on the rear panel of the switch.

Step 1 Connect the RJ-45-to-DB-9 adapter cable to the 9-pin serial port on the PC. Connect the other end of the cable to the switch console port.

Step 2 Start the terminal emulation program on the PC or the terminal. The program, frequently a PC application, such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

Step 3 Configure the baud rate and character format of the PC or terminal to match the console port characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

Step 4 Connect power to the switch as described in Chapter 3, "Power Supply and Fan Module Installation."

Step 5 The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in the "Configuring the Setup Program" section on page C-6.

USB Console Port

The USB mini-Type B port is on the front panel of the switch.

Step 1 If you are connecting the switch USB console port (see Figure C-1) to a Windows-based PC for the first time, install the USB driver.

- "Installing the Cisco Microsoft Windows XP USB Driver" section on page C-4
- "Installing the Cisco Microsoft Windows 2000 USB Driver" section on page C-4
- "Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver" section on page C-4

Figure C-1 Connecting the USB Console Cable to the Catalyst 3750-X or 3560-X Switch
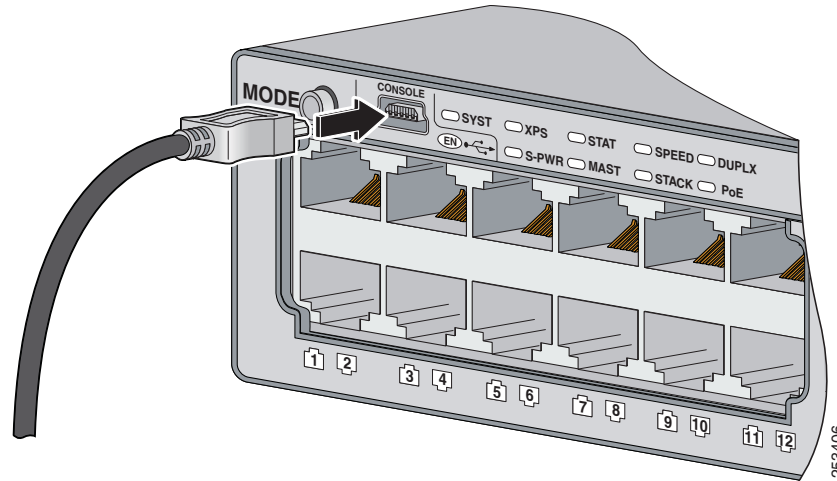
Step 2 Connect a USB cable to the PC USB port. Connect the other end of the cable to the switch mini-B (5-pin-connector) USB console port. See Figure C-1.

Step 3 Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

Step 4 Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

Step 5 Connect power to the switch as described in Chapter 3, "Power Supply and Fan Module Installation.".

Step 6 The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in the "Configuring the Setup Program" section on page C-6.

Installing the Cisco Microsoft Windows USB Device Driver

A USB device driver must be installed the first time a Microsoft Windows-based PC is connected to the USB console port on the switch.

- Installing the Cisco Microsoft Windows XP USB Driver
- Installing the Cisco Microsoft Windows 2000 USB Driver
- Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Installing the Cisco Microsoft Windows XP USB Driver

Step 1   Obtain the file Cisco_usbconsole_driver.zip from the Cisco.com web site and unzip it.

> ✎
>
> **Note**   You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2   If using 32-bit Windows XP, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows XP, double-click the setup(x64).exe file in the Windows_64 folder.

Step 3   The Cisco Virtual Com InstallShield Wizard begins.

Step 4   The Ready to Install the Program window appears. Click **Install**.

Step 5   The InstallShield Wizard Completed window appears. Click **Finish**.

Step 6   Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Installing the Cisco Microsoft Windows 2000 USB Driver

Step 1   Obtain the file Cisco_usbconsole_driver.zip from the Cisco.com web site and unzip it.

> ✎
>
> **Note**   You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2   Double-click the setup.exe file.

Step 3   The Cisco Virtual Com InstallShield Wizard begins. Click **Next**.

Step 4   The Ready to Install the Program window appears. Click **Install**.

Step 5   The InstallShield Wizard Completed window appears. Click **Finish.**

Step 6   Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Step 1   Obtain the file Cisco_usbconsole_driver.zip from the Cisco.com web site and unzip it.

> ✎
>
> **Note**   You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2   If using 32-bit Windows Vista or Windows 7, double-click the setup.exe file in the Windows_32 folder. if using 64-bit Windows Vista or Windows 7, double-click the setup(x64).exe file in the Windows_64 folder.

Step 3   The Cisco Virtual Com InstallShield Wizard begins. Click **Next**.

Step 4   The Ready to Install the Program window appears, Click **Install**.

> **Note** If a User Account Control warning appears, click *Allow - I trust this program* to proceed.

Step 5 The InstallShield Wizard Completed window appears. Click **Finish**.

Step 6 Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Uninstalling the Cisco Microsoft Windows USB Driver

- Uninstalling the Cisco Microsoft Windows XP and 2000 USB Driver
- Uninstalling the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Uninstalling the Cisco Microsoft Windows XP and 2000 USB Driver

Use the Windows Add or Remove Programs utility or the setup.exe file.

Using the Add or Remove Programs utility

> **Note** Disconnect the switch console terminal before uninstalling the driver.

Step 1 Click **Start** > **Control Panel** > **Add or Remove** Programs.

Step 2 Scroll to Cisco Virtual Com and click **Remove**.

Step 3 When the Program Maintenance window appears, select the **Remove** radio button. Click **Next**.

Using the Setup.exe program

> **Note** Disconnect the switch console terminal before uninstalling the driver.

Step 1 Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next**.

Step 2 The InstallShield Wizard for Cisco Virtual Com appears. Click **Next**.

Step 3 When the Program Maintenance window appears, select the **Remove** radio button. Click **Next**.

Step 4 When the Remove the Program window appears, click **Remove**.

Step 5 When the InstallShield Wizard Completed window appears click **Finish**.

Uninstalling the Cisco Microsoft Windows Vista and Windows 7 USB Driver

> **Note**   Disconnect the switch console terminal before uninstalling the driver.

Step 1   Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next**.

Step 2   The InstallShield Wizard for Cisco Virtual Com appears. Click **Next**.

Step 3   When the Program Maintenance window appears, select the **Remove** radio button. Click **Next**.

Step 4   When the Remove the Program window appears, click **Remove**.

> **Note**   If a User Account Control warning appears, click *Allow - I trust this program* to proceed.

Step 5   When the InstallShield Wizard Completed window appears click **Finish**.

Entering the Initial Configuration Information

To set up the switch, you need to complete the setup program, which runs automatically after the switch is powered on. You must assign an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet. This information is also needed to use the device manager or Cisco Network Assistant to configure and manage the switch.

IP Settings

You need this information from your network administrator:

- Switch IP address
- Subnet mask (IP netmask)
- Default gateway (router)
- Enable secret password
- Enable password
- Telnet password

Configuring the Setup Program

If your switches are stacked and there are multiple console connections to individual switches in the stack, the initial setup dialog appears at the console where you first press **Enter**.

Completing the setup program and an initial configuration for the switch:

Step 1   Enter **Yes** at the following two prompts.

```
Would you like to enter the initial configuration dialog? [yes/no]: yes

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system.

Would you like to enter basic management setup? [yes/no]: yes
```

Step 2   Enter a host name for the switch, and press **Return**.

On a command switch, the host name is limited to 28 characters and on a member switch to 31 characters. Do not use *-n*, where n is a number, as the last character in a host name for any switch.

```
Enter host name [Switch]: host_name
```

Step 3   Enter an enable secret password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows spaces, but ignores leading spaces. The secret password is encrypted, and the enable password is in plain text.

```
Enter enable secret: secret_password
```

Step 4   Enter an enable password, and press **Return**.

```
Enter enable password: enable_password
```

Step 5   Enter a virtual terminal (Telnet) password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

```
Enter virtual terminal password: terminal-password
```

Step 6   (Optional) Configure Simple Network Management Protocol (SNMP) by responding to the prompts. You can also configure SNMP later through the CLI, the device manager, or the Network Assistant application. To configure SNMP later, enter **no**.

```
Configure SNMP Network Management? [no]: no
```

Step 7   Enter the interface name (physical interface or VLAN name) of the interface that connects to the management network, and press **Return**. For this release, always use **vlan1** as that interface.

```
Enter interface name used to connect to the
management network from the above interface summary: vlan1
```

Step 8   Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. The IP address and subnet masks shown are examples.

```
Configuring interface vlan1:
Configure IP on this interface? [yes]: yes
IP address for this interface: 10.4.120.106
Subnet mask for this interface [255.0.0.0]: 255.0.0.0
```

Step 9   Enter **Y** to configure the switch as the cluster command switch. Enter **N** to configure it as a member switch or as a standalone switch.

If you enter **N**, the switch appears as a candidate switch in the Network Assistant GUI. You can configure the switch as a command switch later through the CLI, the device manager, or the Network Assistant application. To configure it later, enter **no**.

```
Would you like to enable as a cluster command switch? [yes/no]: no
```

You have completed the initial configuration of the switch, and the switch displays its configuration. This is an example of the configuration output:

```
The following configuration command script was created:
hostname switch1
enable secret 5 $1$Ulq8$DlA/OiaEbl90WcBPd9cOn1
enable password enable_password
line vty 0 15
password terminal-password
no snmp-server
!
no ip routing

!
interface Vlan1
no shutdown
ip address 10.4.120.106 255.0.0.0
!
interface GigabitEthernet1/0/1
!
interface GigabitEthernet1/0/2

interface GigabitEthernet1/0/3
!
...<output abbreviated>
!


interface GigabitEthernet1/0/23
!
end
```

Step 10   These choices appear:

```
[0] Go to the IOS command prompt without saving this config.

[1] Return back to the setup without saving this config.

[2] Save this configuration to nvram and exit.
```

If you want to save the configuration and use it the next time the switch reboots, select option 2 to save it in nonvolatile RAM (NVRAM).

```
Enter your selection [2]:2
```

Make your selection, and press **Return**.

After you complete the setup program, the switch can run the default configuration that you created. To change this configuration or to perform other management tasks, enter commands at the `Switch>` prompt or use Cisco Network Assistant, the Cluster Management Suite (CMS), or another management tool for further configuration.

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